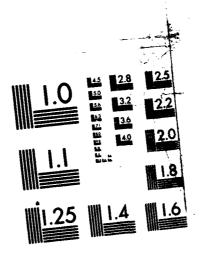
UE BENCH TEST PLANS AND REQUIREMENTS VOLUME 2
ROCKWELL-COLLINS UE SET(U) ESSCUBE ENGINEERING INC
MARLTON NJ SEP 84 CER/GPS-85-156-88-838-VOL-2
N62269-82-D-8059 F/G 14/2 1/3 AD-A166 498 UNCLASSIFIED NL



The same of the same

MICROCOPY RESOLUTION TEST CHARE
NATIONAL BURGAN-OF STANDANGS PAGE 4.7

Make Andrews



GPS-85-156-00-030

AD-A166 498

# RF LABORATORY UE BENCH TEST PLANS AND REQUIREMENTS



# UE BENCH TEST PLANS AND REQUIREMENTS

**VOLUME 2. ROCKWELL-COLLINS UE SET** 

SEPTEMBER 1984

CEA-RFL-84-005

Prepared for:
Naval Air Development Center
Warminster, PA 18974

# TABLE OF CONTENTS

Section		Page
1.0	PURPOSE	1
	1.1 Scope	1
2.0	LIST OF REFERENCE DOCUMENTS	2
3.0	TEST REQUIREMENTS	3
	3.1 Rockwell-Collins UE Test Requirements.	3
	3.1.1 Rockwell-Collins Test Procedures.	4
	3.1.1.1 Power Supply Module	5
	3.1.1.2 RF Synthesizer Module	18
	3.1.1.3 Correlator Module	68
	3.1.1.4 IF Processor Module	76
	3.1.1.5 Reference Oscillator Module	98
	3.1.1.6 Antenna Electronics	115
4.0	SOFTWARE REQUIREMENTS	186
	4.1 Rockwell-Collins Software	187
	4.1.1 Power Supply Module	188
	4.1.2 RF Synthesizer Module	190
	4.1.3 Correlator Module	197
	4.1.4 IF Processor Module	200
	4.1.5 Reference Oscillator Module	213
	4.1.6 Antenna Electronics	218

Accesi	on For		
NTIS DTIC Unann Justific	TAB [		
By L. Dist. ib	a. on fill	_	QUALITY
A	vailability Code	s	INSHEGIED
Dist	Avail and/or Special		)
A-1			

i

# GPS UE BENCH TEST PLANS AND REQUIREMENTS VOLUME 2

#### 1.0 PURPOSE

The purpose of this report is to provide a basis for defining the hardware and software required to perform RF related bench tests of the Rockwell-Collins UE in the RF Laboratory of the GPS Central Engineering Activity at NAVAIRDEVCEN. For additional background information, see Volume 1.

#### 1.1 SCOPE

This report contains general test requirements for each test defining the: 2

level of test (UE, board, component);
test objective (parameter/function),
test inputs;
tests outputs;
equipment required for each input/output;
initial test procedure;
data reduction requirements;
summary list of test equipment (standard/special), a {
block diagram of test.

Since most of these tests will be computer controlled, special software will be required to control the conditions, parameters and data collection needs of the test.

A section on special software requirements is provided which defines the software needs of each test in terms of flowcharts.

## 2.0 LIST OF REFERENCE DOCUMENTS

The following documents were used as references for UE RF configuration and performance requirements:

1.	ICD-GPS-204	GPS Instrumentation and Connector Stds.	5	June	1981
2.	SS-US-200	System Segment Specification	4	Nov.	1982
3.	Collins	Engineering Drawings	23	Feb.	1982
4.	Collins	Design Review	15	March	1982
5.	Harris	GPS AE-1 LRU Performance Test Procedures	26	March	1982

#### 3.0 TEST REQUIREMENTS

The test requirements contained herein deal with the Rockwell-Collins UE set and are written at the board level. Specific values of parameters, ranges, tolerances and granularities are provided if known. As more detailed information on the sets become available, missing values will be provided and the test requirements will be refined and expanded down to the component level.

#### 3.1 ROCKWELL-COLLINS UE TEST REQUIREMENTS

This section contains the test requirements, procedures and block diagrams for board level testing of the Rockwell-Collins UE set. Initial functional test procedures have been compiled for the following boards or units:

- 1. Power Supply
- 2. RF Synthesizer
- Correlator
- 4. IF Processor
- 5. Reference Oscillator
- 6. Antenna Electronics

Although information is available for these boards, there is not enough to completely identify board input and output levels for stimulation and measurement purposes. For example, some of the boards require digital input signals as stimuli. There is not enough information available to determine the required input levels for these signals or the levels for output signals. These digital signals also present a problem in that special purpose hardware may be required to interface the test equipment to the board being tested. This problem will be discussed further in Volume 3, Section 5.0 (Special Purpose Hardware Requirements).

No information has been located concerning Rockwell-Collins Preamplifier Unit. Test requirements for this unit will be provided as information becomes available.

# 3.1.1 Rockwell-Collins Test Procedures

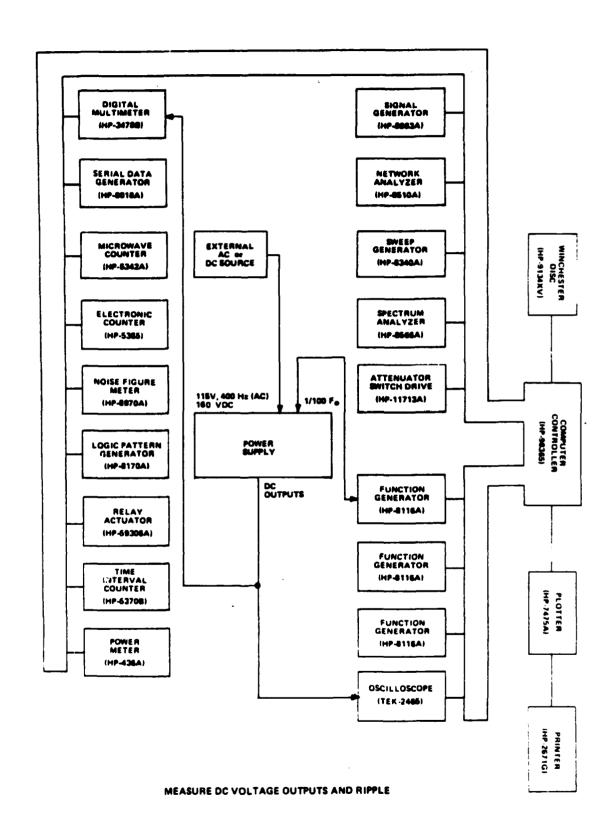
The following sheets contain the initial test requirements and procedures as listed in Section 1.1 for each of the boards identified in Section 3.1. These sheets will be refined and expanded as more information becomes available. Also as more detailed data on the boards becomes available sheets will be added for testing to the component level.

3.1.1.1 POWER SUPPLY MODULE

Boa	rd Tested:	Power Supply	
Tes	t Objective:	Measure DC output voltages.	<del></del>
<del></del>			
<u></u>			
	Inputs		
	Input Name	Input Level	Equipment Used
1.	AC or DC input	115V 400MHz(AC) or 160VDC	External Source
2.	(1/100) Fo		Function Generator (HP-811
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.	-		

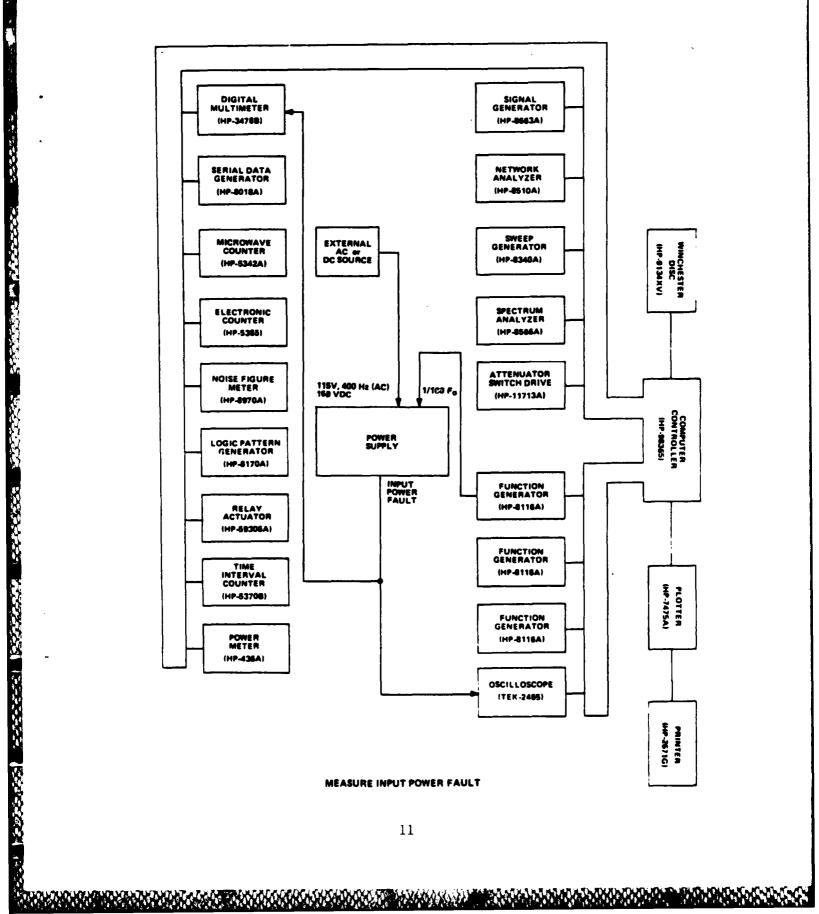
STATE TO SECURITY OF STATES AND SECURITY SECURIT

	Output Name		Output Level		Equipment Used
1.	DC output	_	<u>+ 5 volts</u>	_	Digital Multi (HP-3478B)
2.		_		_	Oscilloscope (TEK-2465)
3.		-		-	
4.				-	
5.		_		-	
Tes	t Procedure: Turn	n on t	est equipment. Set me	asure	ment equipment
pr	oper ranges. Apply pro	oper s	signal levels to all in	puts.	Measure DC
_vo.	ltage with Digital Mult	timete	er. An Oscilloscope wi	ll be	used to check
fo	r ripple. (This will b	oe rep	peated for all DC outpu	ts).	
Dat	a Reduction: Send	linpu	t level and output of	Digita	al Multimeter to
	nter. Output of Oscil				
Equ	ipment List:				
1.	Computer (HP-9836S)	4.	Oscilloscope (TEK-2465)	7.	Plotter (HP-7475A)
2.	Digital Multi (HP-3478B)	5.	Function Gen. (HP-8116A)	8.	
3.	Printer (HP-2671G)	6.	External Source	9.	



Cont	ractor:	Rockwell-Collins	
Boar	d Tested:	Power Supply	
Test	Objective:	Verify Input Power Fault ope	rational.
	Inputs		
	Input Name	Input Level	Equipment Used
1.	AC or DC input	115V, 400Hz(AC) or 160VDC	External Source
2.	(1/100) Fo	102,300Hz @ TBD	Function Generator (HP-8116A
3.			<del>-</del>
4. 5.			
6.			
7.			
8.			
9.			
10.			
12.			

	Output Name		Output Level		Equipment Used
l .	Input Power Fault		TBD		Digital Multi. (HP-3478B)
2.				_	Oscilloscope (TEK-2465)
3.					
1.					
5.				<del></del>	
				<del></del>	
rest	Procedure: Turn	on te	est equipment. Set m	neasuremo	ent equipment
to	proper ranges. Apply	proper	signal levels to al	l input:	s. Measure
Inp	ut Power Fault with Di	gital	Multimeter. Then di	sconnec	t input power
and	measure Input Power F	ault a	gain with Digital Mu	ltimete	r. An Oscillo-
	pe will be used to dis				
		, ···			
Data	Reduction: Send	input	level and output of	Digital	Multimeter
to p	orinter. Output of Osc	cillos	cope to plotter.		<del> </del>
Equi	pment List:				
				_	
1.	Computer (HP-9836S)	4.	Printer (HP-2671G)	7.	Plotter (HP-7475A)
2.	Function Gen. (HP-8116A)	5.	Oscilloscope (TEK-2465)	8.	
3	Digital Multi. (HP-3478B)	6.	External Source	9.	

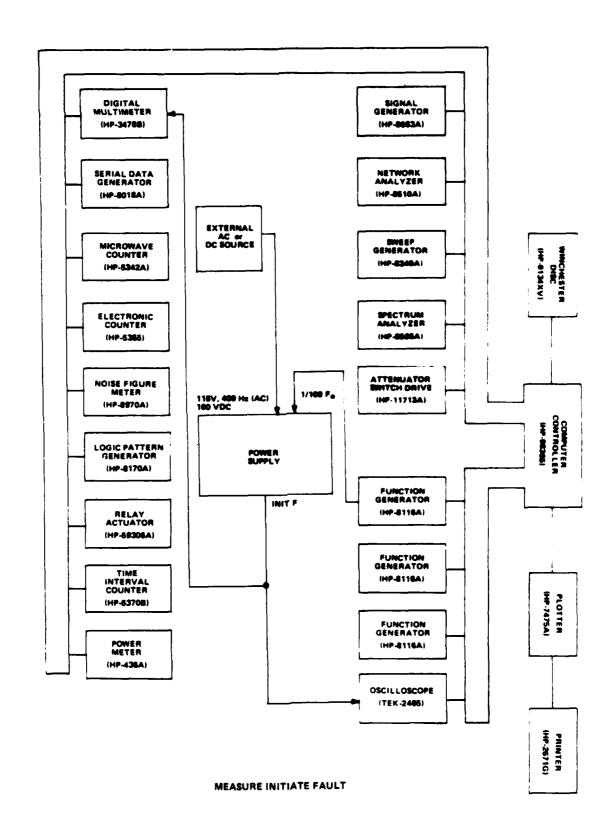


The second of th

concractor:		Rockwell-Collins			
Boar	d Tested:	Power Supply			
Test	Objective:	Verify Initiate Fault operational.			
	Inputs				
	Input Name	Input Level	Equipment Used		
1.	AC or DC input	115V, 400Hz(AC) or 160VDC	External Source		
2.	(1/100) Fo	102,300Hz @ TBD	Function Generator (HP-8116)		
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

STOCK THE STATE OF THE STATE OF

	Outputs Output Name		Output Level		Equipment U
i.	Initiate Fault	-	TBD	_	Digital Multi (HP-347
2.		-		_	Oscilloscope (TEK-24
3.		-		_	
4.		-	<del></del>	_	
5.		-		_	
mo.	et Procedure: m		ook anderset Cit		
	st Procedure: Turr				
	proper ranges. Apply				
<u>Ir</u>	nitiate Fault output wit	h Dig	ital Multimeter. An O	scillo	oscope will be
us	sed to display waveform.			· <del>····</del>	
_					
	a Reduction: Sen	d inp	ut level and output of	Digit	tal Multimeter
	ta Reduction: Sen			Digit	tal Multimeter
	ta Reduction: Sen			Digit	tal Multimeter
				Digit	cal Multimeter
_to	printer. Output of Os			Digit	cal Multimeter
_to				Digit	cal Multimeter
_to	printer. Output of Os		scope to plotter.		Plotter (HP-7475
_to	printer. Output of Os	cillo	Scope to plotter.  Printer (HP-2671G)		
Equ. 1. 2.	printer. Output of Os  ipment List:	4. 5.	Printer (HP-2671G) Oscilloscope (TEK-2465)	7. 8.	
Equ	printer. Output of Os  ipment List: Computer (HP-9836S)	4. 5.	Scope to plotter.  Printer (HP-2671G)	7.	
	printer. Output of Os  ipment List:	4. 5.	Printer (HP-2671G) Oscilloscope (TEK-2465)	7. 8.	
	printer. Output of Os  ipment List:	4. 5.	Printer (HP-2671G) Oscilloscope (TEK-2465)	7. 8.	



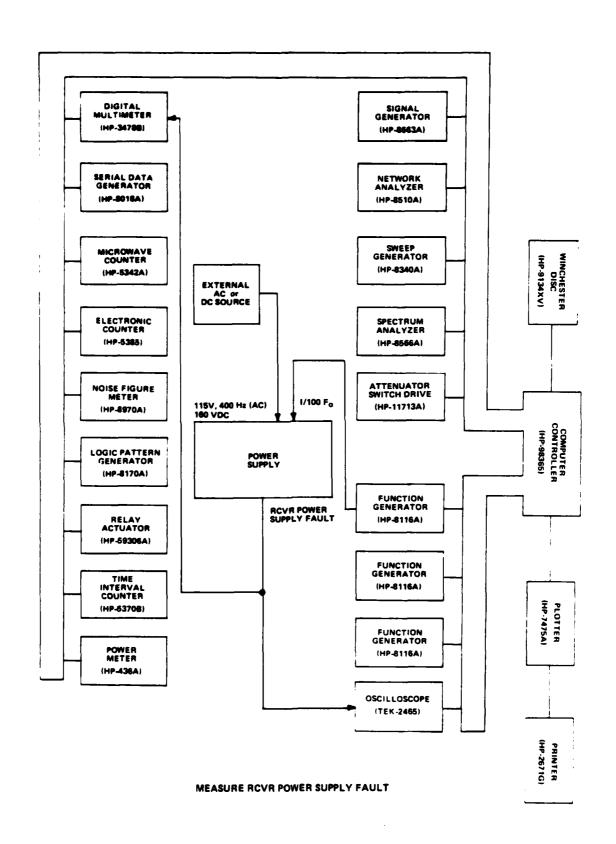
The second secon

escenses beenceses kokopon cooperes accuses cooperes assesses macerial angleses:

Contr	ractor:	Rockwell-Collins	
Board	d Tested:	Power Supply	
<u> Pest</u>	Objective:	Verify receiver Power Supply F	Fault operational.
		·	
	Inputs		
	Input Name	Input Level	Equipment Used
1	AC or DC input	115V, 400Hz(AC) or 160VDC	External Source
2	(1/100) Fo	102,300Hz @ TBD	Function Generator (HP-81
3			
4			
5			
6		·	
7			
8.			
9.			
0.			
1.			

12.

	loscope (TEK-2
3	ropope (15v-5
3	
4	<del> </del>
5	
Test Procedure: Turn on test equipment. Set measurement equ	ui nment
to proper ranges. Apply proper signal levels to all inputs. Meas	
Receiver Power Supply Fault with Digital Multimeter. An Oscillosc	
will be used to display waveform.	
	motor to
Data Reduction: Send input level and output of Digital Multi	meter to
	meter to
Data Reduction: Send input level and output of Digital Multi-	meter to
Data Reduction: Send input level and output of Digital Multi	meter to
Data Reduction: Send input level and output of Digital Multi-	meter to
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:	<del></del>
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:	meter to
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:	<del></del>
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:  1. Computer (HP-9836S) 4. Printer (HP-2671G) 7. Plotte	<del></del>
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:  1. Computer (HP-9836S) 4. Printer (HP-2671G) 7. Plotte 2. Function Gen. (HP-8116A) 5. Oscilloscope (TEK-2465) 8.	<del></del>
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:  1. Computer (HP-9836S) 4. Printer (HP-2671G) 7. Plotte 2. Function Gen. (HP-8116A) 5. Oscilloscope (TEK-2465) 8.	<del></del>
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:  1. Computer (HP-9836S) 4. Printer (HP-2671G) 7. Plotte 2. Function Gen. (HP-8116A) 5. Oscilloscope (TEK-2465) 8.	<del></del>
Data Reduction: Send input level and output of Digital Multiprinter. Output of Oscilloscope to plotter.  Equipment List:  1. Computer (HP-9836S) 4. Printer (HP-2671G) 7. Plotte 2. Function Gen. (HP-8116A) 5. Oscilloscope (TEK-2465) 8.	<del></del>



4

343825

\*\*\*\*

CHARLES TO SECURITY OF THE PROPERTY OF THE PRO

3.1.1.2 RF SYNTHESIZER MODULE

Contractor:	Rockwell-Collins	_
Board Tested:	RF Synthesizer	_
Test Objective:	Verify proper operation of	Control Signals
output from synthesi	izer.	

#### Inputs Input Name Input Level Equipment Used l. \* Fo (3 inputs) 10.23MHz @ TBD Signal Generator (HP-8663A) \*\* Time Mark Enable TBD Log Patt. Gen. (HP-8170A) 3. \*\* Code Gen. Reset Strobe TBD Log Patt. Gen. (HP-8170A) \*\* Init F 4. TBD Log Patt. Gen. (HP-8170A) TBD 5. \*\* BIT IF Control Log Patt. Gen. (HP-8170A) \*\* 137/4 Fo Control 6. TBD Log Patt. Gen. (HP-8170A) 7. 8. 9. 10. 11.

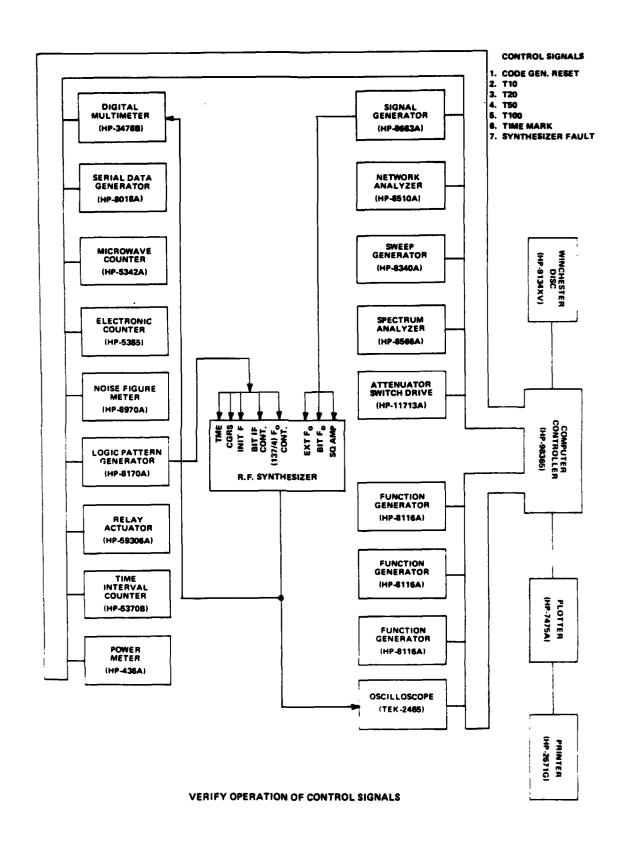
12.

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

SOUTH CONTROL M SOUTH

	Output Name	Output I	Level	Equipment Used
1.	Code Gen. Reset	TBD		DMM (HP-3478B)
2.	<u>T</u> 10	TBD	<del></del>	Scope (TEK-2465)
3.	T20	TBD		
4.	T50	TBD		
5.	T100	TBD		
6.	Time Mark	TBD		
7.	Synthesizer Fault	TBD	<del></del> -	
	_	up unit test as s		Ada Marana an
1	roper signal levels to evel of Control Signals ith scope.			_
	a Reduction: Send			tal Multimeter
Equ	ipment List: Sig. Cen. (HP-8663A)	4. Printer (HF	-2671G) 7.	Plotter (HP-7475A)
		<u> </u>		
2.	Log Patt. Gen. (HP-8170A)	5. <u>DMM (HP-347</u>	<u>od)</u> ••	
3.	Computer (HP-9836S)	6. Scope (TEK-	<u> 2465)</u> 9.	



Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper frequency output from BIT Fo
output of synthesizer	

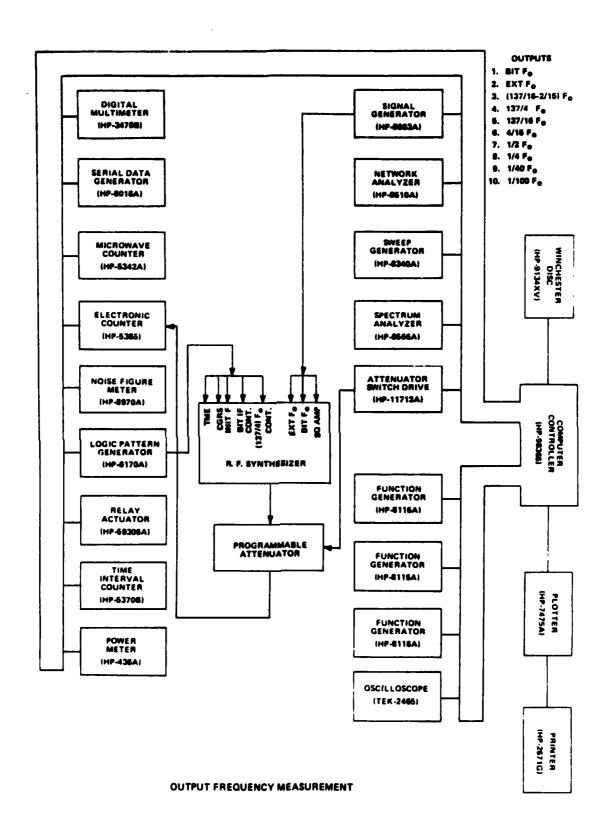
# Inputs

Input Name	Input Level	Equipment Used
* Fo (3 inputs)	10.23MHz @ TBD	Signal Generator (HP-8663A)
** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
** Code Gen. Reset Strobe	TBD	Log Patt. Cen. (HP-8170A)
** Init F	TBD	Log Patt. Cen. (HP-8170A)
** BIT IF Control	TBD	Log Patt. Cen. (HP-8170A)
** 137/ <sub>4</sub> Fo Control	TBD	Log Patt. Cen. (HP-8170A)
<del></del>		

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	BIT Fo	_	10.23MHz	_	Elec. Counter (HP-5385)
2.		_			Prog. Atten. (HP-8494G)
3.		_		_	Att Sw Drive (HP-11713A)
4.					
5.				<del></del>	
		-		<b></b>	
m	b. D				
res	t Procedure: Hoo	k up i	<u>init under test as sho</u>	wn in	schematic.
Tu	rn on test equipment.	Set r	neasurement equipment	to pro	per ranges.
Αp	ply proper signal leve	ls to	inputs of synthesizer	board	. Measure
οu	tput frequency with El	ectro	nic Counter.		<del> </del>
Dat	a Reduction: Send	input	levels and output of	Elect	ronic Counter to
pr	inter.	<u> </u>			
Egu	ipment List:				
1.	Sig. Cen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Atten. Sw Dr. (HP-11713A)
2.	Log Patt Gen (HP-8170A)	5.	Elec. Ctr. (HP-5385)	8.	
3.	Computer (HP-9836S)	6.	Prog. Atten. (HP-8494G)	9.	



· 文章

the state of the second second second meaning second second second second second second second second

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper frequency output from Ext Fo output
of synthesizer.	·

# Inputs

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Cen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 137/ <sub>4</sub> Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Outputs				
	Output Name		Output Level		Equipment Used
1.	Ext Fo	_	10.23MHz	<del>-</del>	Elec Counter (HP-5385)
2.		_		_	Prog. Atten (HP-8494G)
3.		_			Att. Sw. Drive (HP-11713
4.	·	_		_	<del></del>
5.		_		_	
Tes	t Procedure: Hoo	ok un	unit under test as sho	wn in	schematic Turn
or	n test equipment. Set	measu	rement equipment to pro	oper 1	ranges. Apply
pı	roper signal levels to	input	s of synthesizer board	. Mea	asure output
۴۱	requency with Electron:	ic Con	nter		
1	requency with Electron.	rc cou	ncer.		
 	a Reduction: Seno	i inpu	t levels and output of	Elect	cronic Counter
		i inpu	t levels and output of	Elect	tronic Counter
	a Reduction: Send	i inpu	t levels and output of	Elect	tronic Counter
		i inpu	t levels and output of	Elect	cronic Counter
		i inpu	t levels and output of	Elect	tronic Counter
tc	printer.	inpu	t levels and output of	Elect	cronic Counter
tc		i inpu	t levels and output of	Elect	cronic Counter
Equ	printer.				·
tc	ipment List: Signal Cen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Att Sw Drive (HP-11713A)
Equ	printer.				·
Equ	ipment List: Signal Cen. (HP-8663A)	4.	Printer (HP-2671G)	7.	·
Equ 1.	ipment List:  Signal Cen. (HP-8663A)  Log Patt Cen (HP-8170A)	4. 5.	Printer (HP-2671G) Elec Counter (HP-5385)	7.	·
Equ 1.	ipment List:  Signal Cen. (HP-8663A)  Log Patt Cen (HP-8170A)	4. 5.	Printer (HP-2671G) Elec Counter (HP-5385)	7.	·
Equ 1.	ipment List:  Signal Cen. (HP-8663A)  Log Patt Cen (HP-8170A)	4. 5.	Printer (HP-2671G) Elec Counter (HP-5385)	7.	·
Equ 1.	ipment List:  Signal Cen. (HP-8663A)  Log Patt Cen (HP-8170A)	4. 5.	Printer (HP-2671G) Elec Counter (HP-5385) Prog Atten. (HP-8494G)	7.	·
Equ 1.	ipment List:  Signal Cen. (HP-8663A)  Log Patt Cen (HP-8170A)	4. 5.	Printer (HP-2671G) Elec Counter (HP-5385)	7.	·

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper frequency from (137/16 - 2/15) Fo
output of synthesizer	•

# Inputs

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Cen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control_	TBD	Log Patt. Gen. (HP-8170A)
6.	** 137/4 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			
10.			
11.		-	
12.			-

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

Applitudent sometic become present receive person ordered sometic property

	Output Name		Output Level		Equipment Used
1.	( <sup>137</sup> / <sub>16</sub> - <sup>2</sup> / <sub>15</sub> ) Fo	_	86.230375MHz	_	Elec Counter (HP-5385)
2.		_		_	Prog. Atten (HP-8494G)
3.		_			Att. Sw Drive (HP-11713A)
4.		_		_	
5.		_		_	
Tes	t Procedure: Hoo	k up u	nit under test as show	vn in	schematic. Turn
	n test equipment. Set				
	roper signal levels to				<del>-</del>
	/ 15) Fo frequency with				404.0
	137 PO Trequency with	Elect	ronic counter.		
		<del> </del>	-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-	<del> </del>	
				<del></del>	
Dat	a Reduction: Send	input	levels and output of	Electi	ronic Counter
to	printer.	-	<del></del>		
Equ	ipment List:				
1.	Sig. Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Att Sw Drive (HP-11713A)
2.	Log Patt Cen (HP-8170A)	5.	Elec Counter (HP-5385)	8.	
3.	Computer (HP-9836S)	6.	Prog Atten. (HP-8494G)	9.	

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper frequency output of (137/4) Fo
synthesizer output.	

# <u>Inputs</u>

TOTAL MANAGEMENT, POSSOCIONES

CHARLE CONTROL CONTROL

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 137/4 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.		<del></del>	
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

peral beneficial includes forestated includes advisors mergeles approprie scharge included

	Output Name		Output Level		Equipment Used
1.	( <sup>137/</sup> 4) Fo	· <del>-</del>	350.3775MHz	_	Elec Counter (HP-5385)
2.		_		_	Prog. Atten. (HP-8494G)
3.		_		_	Att Sw Drive (HP-11713A)
4.		-			
5.		-		_	
		-		-	
Test	t Procedure: Hoo	ok up	unit under test as sho	wn in	schematic.
	urn on test equipment.				
	oply proper signal leve			· goard	1. Measure
( )	37/4) Fo frequency with	th Ele	ctronic Counter.		
<del></del>		<u> </u>			
					<del>-</del>
Data	a Reduction: Send	inpu	t levels and output of	Elect	ronic Counter
to	printer.				<del>_</del>
F~	inmont list.				
Equ.	ipment List:				
1.	Signal Cen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Att Sw Drive (HP-11713A)
2.	Log Patt Gen (HP-8170A)	5.	Elec Counter (HP-5385)	8.	
3.	Computer (HP-9836S)	6.	Prog Atten. (HP-8494G)	9.	

<u>Contractor</u> :	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper output frequency from synthesizer
( <sup>137/</sup> 16) Fo output.	

## <u>Inputs</u>

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Cen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt, Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Cen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Cen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt, Gen. (HP-8170A)
6.	** <sup>137/</sup> 4 Fo Control	TBD	Log Patt. Cen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for thes 5 inputs.

	Output Name		Output Level		Equipment Used
1.	( <sup>137/</sup> 16)Fo	_	87.594375MHz	_	Elec Counter (HP-5385)
2.	····	_		<del>-</del>	Prog. Atten. (HP-8494G
3.		_		<del></del>	Att Sw Drive (HP-11713
4.		_		_	
5.		_		_	
		_			
Tes	t Procedure: _ Hook	_up_ur	nit under test as show	n in :	schematic. Turn
	n test equipment. Set				
	roper signal levels to				
	equency with Electroni				
	equency with Breeding	<u>c cou.</u>	100.		
		-			
	<del></del>				
Dat	a Reduction: Send	<u>i inpu</u>	t levels and output of	`Elec	tronic Counter
to	printer.				
		<u>.                                      </u>			
Equ	ipment List:				
1.	Signal Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Att Sw Drive (HP-11713A)
2.	Log Patt Gen. (HP-8170A)		Elec Counter (HP-5385)	8.	
2				a	

Contractor:	Rockwell-Collins					
Board Tested:	RF Synthesizer					
Test Objective:	Verify proper output frequency from synthesizer					
(4/15)Fo output.						

#### Inputs Input Name Input Level Equipment Used Signal Gen. (HP-8663A) 10.23MHz @ TBD \* Fo \_\_\_\_(3 inputs) TBD \_\_\_\_ Log Patt. Gen. (HP-8170A) 2. \*\* Time Mark Enable TBD Log Patt. Gen. (HP-8170A)\_ 3. \*\* Code Gen. Reset Strobe Log Patt. Gen. (HP-8170A) TBD 4. \*\* Init\_F \_\_\_\_\_ \_\_\_\_TBD Log Patt. Gen. (HP-8170A)\_ 5. \*\* BIT IF Control \*\* <sup>137/</sup>4 Fo Control TBD Log Patt. Gen. (HP-8170A) 7. 8. 10. 11. 12.

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
l.	( <sup>4/</sup> 15) Fo		2.728MHz	_	Elec Counter (HP-5385)
2.				-	Prog. Atten. (HP-84940
3.				_	Att. Sw Dr. (HP-11713A
4.				-	
5.				-	
rest	Procedure: Hook	up un	nit under test as show	n in s	schematic. Turn
on	test equipment. Set	measur	ement equipment to pr	oper r	anges. Apply
pro	oper signal levels to	inputs	of synthesizer board	. Mea	sure the
fre	equency of the (4/15) F	o out	put signal with the E	lectro	onic Counter.
Re	peat this measurement	for th	e following outputs.		
					<del></del>
	½Fo 1/40 Fo				
	½Fo 1/100 Fo				
Data	Reduction: Send	input	levels and output of	Elect	ronic Counter
to	printer.				
					<u></u>
Equi	pment List:				
1.	Signal Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Att. Sw Drive (HP-11713A)
2.	Log Patt. Cen. (HP-8170A)		Flec Counter (HP-5385)	8.	ALUGE THE THE TABLE
3.	Computer (HP-9836S)		Prog. Attn (HP-8494G)		

<u>Contractor</u> :	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper power level for BIT Fo signal from
synthesizer.	

#### Inputs Input Name Input Level Equipment Used 1. \* Fo (3 inputs) 10.23MHz @ TBD Signal Gen. (HP-8663A) 2. TBD \*\* Time Mark Enable Log Patt. Gen. (HP-8170A) 3. Log Patt. Gen. (HP-8170A) \*\* Code Gen. Reset Strobe TBD 4. \*\* Init\_F TBD Log Patt. Gen. (HP-8170A) 5. \*\* BIT IF Control \_\_\_\_TBD Log Patt. Gen. (HP-8170A) \*\* <sup>137/</sup>4 Fo Control \_\_\_\_TBD Log Patt. Cen. (HP-8170A) 7. 8. 9. 10.

11.

12.

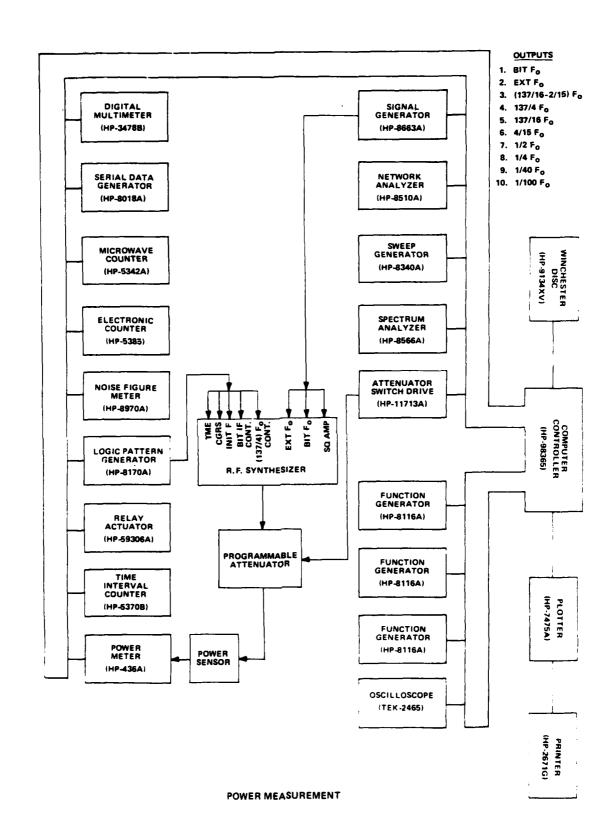
<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

Computer (HP-9836S)

CONTROL OF SECURIOR S

	Output Name		Output Level		Equipment Used
l.	BIT Fo		TBD	-	Power Meter (HP-436A)
2.		•		-	Power Sensor (HP-8481A)
3.		-		-	Prog. Atten. (HP-8494G)
4.				-	Att. Sw Drive (HP-11713A
5.		-		_	
on pro	test equipment. Set moper signal levels to i	easure nputs	ement equipment to pro	oper r	anges. Apply
Data	a Reduction: Send	input	levels and output of	Power	Meter to
pri	inter.				
Equi	ipment List:				
1.	Sig. Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Prog. Atten. (HP-8494G)
2.	Log Patt Gen. (HP-8170A)	5.	Power Meter (HP-436A)	8.	Att Sw Drive (HP-11713A)



the second according

Participal production assesses (social control

Contractor:	Rockwell-Collins	
Board Tested:	RF Synthesizer	
Test Objective:	Verify proper power level for Ext Fo signal	_
from Synthesizer.		

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD_	Log Patt. Gen. (HP-8170A)
3.	** Code Cen. Reset Strobe	TBD	Log Patt. Cen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Cen. (HP-8170A)
6.	** <sup>137/</sup> 4 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	Ext Fo		TBD	_	Power Meter (HP-436A)
2.				<del>-</del>	Power Sensor (HP-8481A)
3.				<del></del>	Prog. Atten. (HP-8494G)
4.				_	Att. Sw Dr. (HP-11713A)
5.	·			_	
				_	
Test	Procedure: Hook	up u	nit under test as show	n in s	schematic. Turn
	test equipment. Set				
			-		
	oper signal levels to			. <u>Mea</u>	asure the power
le	vel of the output sign	al wi	th the Power Meter.		
					<del></del>
					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Data	a Reduction:Sen	d inp	ut levels and output o	f Powe	er Meter to
-	inter.				
<u> </u>					
	····				
Equi	ipment List:				
1.	Sig. Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Prog. Atten. (HP-8494G)
2.	Log Patt Gen (HP-8170A)	5.	Power Meter (HP-436A)	8.	Att.Sw Dr. (HP-11713A)
3.	Computer (HP-9836S)	6.	Power Sensor (HP-8481A)	9.	

Contractor:	Rockwell-Collins	_
Board Tested:	RF Synthesizer	_
Test Objective:	Verify proper power level	for [ <sup>137/</sup> 16 - <sup>2/</sup> 15] Fo
signal from synthesiz	er	

# <u>Inputs</u>

end sener, repair france essenteres essente essente essente reserva essente encepte encepte encepte essente

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt, Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** <sup>137</sup> / <sub>4</sub> Fo Control	TBD	Log Patt. Cen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	$(^{137}/16 - ^{2}/15)$ Fo	_	TBD	_	Power Meter (HP-436A)
2.		-		-	Power Sensor (HP-8481A
3.		-		_	Prog. Atten. (HP-8494G
4.		-		_	Att. Sw Drive (HP-11713A)
5.		-			
Tes	t Procedure: Hoo	ok up	unit under test as sho	own in	schematic.
	Turn on test equipment.	. Se	t measurement equipmen	t to p	roper ranges.
	Apply proper signal lev	vels :	to inputs of synthesize	er boai	rd. Measure
	the power level of the	(137)	16 - <sup>2</sup> /15)Fo output sig	znal w:	ith the Power
	Meter.		<del></del>		
		<del>-</del>			
Dat	a Reduction: Seno	i inn	ut levels and output of	Power	. Meter to
	orinter.	<u> </u>	at levels and output of	TOWC	<u> </u>
	rincer				
Equ	ipment List:				
1	Simple Com (ID 06624)	4	D. 1. 1. 1. (VD. 0474.7)	7	B 444 (77 2022)
1.	Signal Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Prog. Atten. (HP-8494G)
2.	Log Patt Cen (HP-8170A)	5.	Power Meter (HP-436A)	8.	Att. Sw Drive (HP-11713A)
3.	Computer (HP-9836S)	6.	Power Sensor (HP-8481A)	9.	

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper power level for (137/16)Fo signal
from synthesizer.	

sees surgery, recorded becaused experient approach phononic bullyance business locations personnel base

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Cen. (HP-8170A)
6.	** 1374 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			-
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	<sup>137</sup> /16 Fo	_	TBD	<del></del>	Power Meter (HP-436A)
2.		<del>-</del>		_	Power Sensor (HP-8481A)
3.		_		_	Prog. Atten. (HP-8494G)
4.		_		_	Att Sw Drive (HP-11713A)
5.		-		_	
	Turn on test equipment Apply proper signal le	. Set	unit under test as sho t measurement equipment to inputs of synthesize	to pi	roper ranges. rd. Measure
	a Reduction: Send	input	t levels and output of	Power	Meter to
Equ	ipment List:				
1.	Signal Cen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Prog. Atten. (HP-8494G)
2.	Log Patt Gen (HP-8170A)	5.	Power Meter (HP-436A)	8.	Att Sw Drive (HP-11713A)
3.	Computer (HP-9836S)	6.	Power Sensor (HP-8481A)	9.	

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper power level for (137/4)Fo signal
from synthesizer.	

concern harveste beareand received assessed societies in additional

#### 

- 9.
- 11.
- 12.
  - \* Power splitter needed to provide these 3 inputs.
  - \*\* Breakout board needed to provide various levels for thes 5 inputs.

	Output Name		Output Level		Equipment Used
1.	( <sup>137</sup> /4)Fo	_	TBD		Power Meter (HP-436A)
2.		-		_	Power Sensor (HP-8481A)
3.	· · · · · · · · · · · · · · · · · · ·	-		_	Prog. Atten. (HP-8494G)
4.		-		_	Att Sw Drive (HP-11713A)
5.		-		_	
Tes	t Procedure: Hoo	k up	unit under test as sho	wn in	schematic. Turn
	on test equipment. Se	t mea	surement equipment to	proper	ranges. Apply
	proper signal levels t	o inp	uts of synthesizer boa	rd. N	Measure the
	power level of the (13	7 <sub>4)Fo</sub>	output signal with th	e Powe	er Meter.
		_		———·	<del></del>
		<del></del>			
Dat	a Reduction: Send	inpu	t levels and output of	Power	Meter to
pr	inter.				
		··			
Equ	ipment List:				
1.	Sig. Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Prog. Atten. (HP-8494G)
2.	Log Patt Gen (HP-8170A)	5.	Power Meter (HP-436A)	8.	Att. Sw Drive (HP-11713A)
3.	Computer (HP-9836S)	6.	Pawer Sensor (HP_8481A)	9.	

Contractor:	Rockwell-Collins	_
Board Tested:	RF Synthesizer	-
Test Objective:	Verify proper power level	(4/15)Fo output signal
from synthesizer.		

#### Inputs Input Level Equipment Used Input Name 10.23MHz @ TBD Signal Gen. (HP-8663A) 1. \* Fo (3 inputs) TBD Log Patt. Gen. (HP-8170A) 2. \*\* Time Mark Enable \*\* Code Gen. Reset Strobe TBD Log Patt. Gen. (HP-8170A) 3. TBD Log Patt. Gen. (HP-8170A) 4. \*\* Init F Log Patt. Gen. (HP-8170A) 5. \*\* BIT IF Control TBD \*\* <sup>137</sup>/<sub>4</sub> Fo Control TBD Log Patt. Gen. (HP-8170A) 7. 8. 9. 10. 11.

POSSESSION CONTRACTOR OF THE PROPERTY OF THE P

12.

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output 1	Level		Equipment U	sed
1.	(4/15) Fo	-	T	BD	-	Power Meter (HP-	436A)
2.	<del></del>	_			-	Power Sensor (HP	<u>-8481A)</u>
3.	<del></del>	_			_	Prog. Atten. (HP	-8494G)
4.		_			-	Att Sw Drive (HP-	-11713A)
5.		-			-		
Tes	t Procedure: Hoo	k up i	unit under te	est as show	vn in	schematic. Turn	
	on test equipment. Se	t mea	surement equi	ipment to	proper	ranges. Apply	
	proper signal levels t	o inp	uts of synthe	esizer boar	rd. M	easure the power	
	level of the (4/15)Fo	outpu	t signal with	the Power	Me te	r. Repeat this	
	measurement for the fo	llowi	ng output:	•			
			₹Fo	)40Fo			
			₽F0	) <sub>100F0</sub>			
					- · -		
Dat	a Reduction: Send	innu	t levels and	output of	Power	Meter to	
	rinter.	IIIDU	v ICVCID dila	Output Of	TOWCI	THE DET . CO	
pr	incer.						
		-		<del></del>			
Equ	ipment List:						
1.	Signal Cen. (HP-8663A)	4.	Printer (H	?-2671G)	7.	Prog. Atten. (HP-8494	<u>.G)</u>
2.	Log Patt Gen (HP-8170A)	5.	Power Meter (	HP-436A)	8.	Att. Sw Drive (HP-117	<u>13A</u> )
2	Commutan (UD 00365)	6	De on Senson	/UD 2/21/1	9		

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper spectral content of synthesizer
Ext Fo output.	·

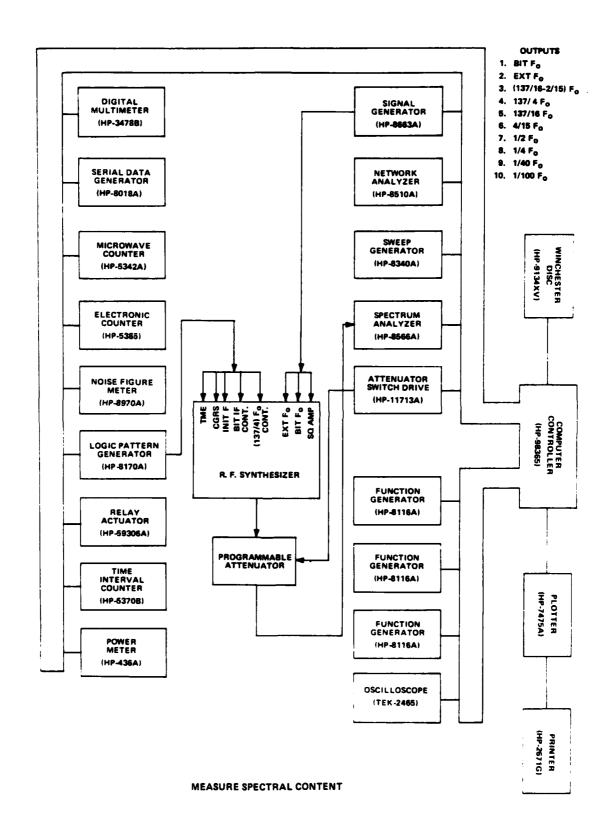
and becomed between the second (economy seconds) "seconds areas seconds and seconds.

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** <sup>137</sup> / <sub>4</sub> Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			· · · · · · · · · · · · · · · · · · ·
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name	Output Level	Equipment Used
1.	Ext Fo	TBD	Spectrum Anal. (HP-8566A)
2.			Prog. Atten. (HP-8494G)
3.			Att Sw Drive (HP-11713A)
4.			
5.			
		ok up unit under test as shown	
	Turn on test equipment.	. Set measurement equipment t	to proper ranges.
	Apply proper signal lev	vels to inputs of synthesizer	board. Measure the
	spectral content of the	Ext Fo output with the Spect	rum Analyzer
	checking for spurious (	outputs, harmonic levels, freq	quency stability etc.
<u>Dat</u>	a Reduction: Send	i input levels to printer. Ou	tput of Spectrum
Ana	lyzer to plotter.		
	· · · · · · · · · · · · · · · · · · ·		
Equ	ipment List:		
1.	Signal Cen. (HP-8663A)	4. <u>Printer (HP-2671G)</u>	7. <u>Att Sw Dr. (HP-11713A)</u>
2.	Log Patt Gen (HP-8170A)	5. Spec. Anal. (HP-8566A)	8. <u>Plotter (HP-7475A)</u>
2	a /ITD 000(0)	6 Dona Atton (IT) 9/0/3)	۵



Contractor:	Rockwell-Collins	
Board Tested:	RF Synthesizer	
Test Objective:	Verify proper spectral content of synthesizer	_
BIT Fo output.		_

and opposite sociale remain assessed popular assistant remains second because because because hopes

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 1374 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

THE RESIDENT PROPERTY OF THE P

	Output Name	Output Level	Equipment Used
ı .	BIT Fo	TBD	Spectrum Anal. (HP-8566A)
2.			Prog. Atten. (HP-8494G)
3.			Att Sw Drive (HP-11713A)
4.			
5.			
Test	: Procedure: Ho	ook up unit under test as show	n in schematic.
		Set measurement equipment t	
		rels to inputs of synthesizer	
t	the spectral content of	`the Bit Fo output with the S	pectrum Analyzer
	thecking for spurious o	outputs, harmonic levels, freq	uency stability etc.
	<del></del>	· · · · · · · · · · · · · · · · · · ·	<del></del>
Data	Reduction: Send	input levels to printer. Ou	tput of Spectrum
	yzer to plotter.		
Allai	yzer to protter.	<del></del>	<del></del>
Equi	ipment List:		-
1.	Signal Gen. (HP-8663A)	4. <u>Printer (HP-2671G)</u>	7. Att Sw Drive (HP-11713A)
2.	Log Patt Gen (HP-8170A)	5. Spec. Anal. (HP-8566A)	8. <u>Plotter (HP-7475A)</u>
_	a (I'm eco(a)		•

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper spectral content of synthesizer
( <sup>137</sup> /16 - 2/15)Fo ou	tput.

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 1374 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.			
8.			
9.			
10.			
11.		<u></u>	-
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

Assistant Investors British Br

	Output Name		Output Level		Equipment Used
1.	( <sup>137</sup> /16 - 2/15)Fo	_	TBD		Spec. Analyzer (HP-8566A)
2.		-		<del></del>	Prog. Atten. (HP-8494G)
3.		_			Att. Sw Drive (HP-11713A)
4.					
5.		-			
		•			
Test	: Procedure: Hool	ו חנו	unit under test as sh	own in s	chematic. Turn
	on test equipment. Se				
	proper signal levels to				
s	pectral content of the	e ( <sup>13</sup> /	16 - 2/15)Fo output	with the	Spectrum
A	nalyzer checking for	spurio	ous outputs, harmonic	levels,	frequency
s	tability etc.				
				0.4.4	
	Reduction: Send	<u>ı ınpı</u>	it levels to printer.	Output	or Spectrum
Anal	yzer to plotter.			<del> </del>	
Equi	pment List:				
1.	Signal Gen. (HP-8663A)	4.	Printer (HP-2671G)	7.	Att Sw Dr. (HP-11713A)
2.	Log Patt Gen (HP-8170A)	5.	Spec. Anal. (HP-8566A)	8.	Plotter (HP-7475A)
3.	Computer (HP-9836S)	6.	Prog. Atten. (HP-8494G)	9.	

Contractor:	Rockwell-Collins			
Board Tested:	RF Synthesizer			
Test Objective:	Verify proper spectral content of synthesizer			
( <sup>137</sup> / <sub>4</sub> )Fo output.				

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Cen. (HP-8170A)
3.	** Code Cen, Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	## Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 1374 Fo Control	TBD	Log Patt. Cen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	( <sup>137</sup> /4)Fo	_	TBD		Spec. Anal. (HP-8566A)
2.				_	Prog. Atten. (HP-8494G)
3.					Att Sw Drive (HP-11713A)
4.				_	
5.		-		_	
•		-		_	
Tes	t Procedure: Hook	up u	nit under test as show	n in s	chematic. Turn
	on test equipment. Set	meas	urement equipment to p	roper	ranges. Apply
	proper signal levels to	inpu	ts of synthesizer boar	d. Me	asure the
5	spectral content of the	137	4)Fo output with the S	pectur	m Analyzer
	checking for spurious o				
					<del></del>
		<del> </del>			
Dat	a Reduction: Sen	d inp	ut levels to printer.	Outpu	t of Spectrum
Anal	yzer to plotter.				
Equ	ipment List:				
1.	Signal Cen. (HP-8170A)	4.	Printer (HP-2671G)	7.	Att Sw Dr. (HP-11713A)
2.	Log Patt Cen (HP-8170A)	5.	Spec. Anal. (HP-8566A)	8.	Plotter (HP-7475A)
3.	Computer (HP-9836S)	6.	Prog. Atten. (HP-8494G)	9.	_

Contractor:	Rockwell-Collins				
Board Tested:	RF Synthesizer				
Test Objective:	Verify proper spectral content of synthesizer				
( <sup>137</sup> 16)Fo output.	·				

and interest ensisted tenester assesses ensisted

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	<u>TB</u> D	Log Patt. Cen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt, Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 1374 Fo Control	TBD	Log Patt. Cen. (HP-8170A)
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	( <sup>137</sup> 16)Fo	_	TBD		Spec. Anal. (HP-8566A)
2.		_			Prog. Atten. (HP-8494G)
3.		_		<del></del>	Att. Sw Drive (HP-11713A)
4.	<del></del> -	<del>-</del>		<del></del>	
5.		-		<del></del>	
ο.		-		<del></del>	
Tes	t Procedure: Hoo	k up u	nit under test as s	hown in s	schematic. Turn
(	on test equipment. Se	t meas	urement equipment t	o proper	ranges. Apply
	proper signal levels to				
	spectral content of the				
	checking for spurious	ou cpu c	s, narmonic levels,	i requenc	y stability etc.
					•
		<del></del>			
Data	a Reduction: Send	input	t levels to printer	. Output	of Spectrum
Anal	yzer to plotter.	·			
Equ.	ipment List:				
1.	Signal Gen. (HP-8663A)	4.	Printer (HP-2671G	<u> </u>	Att Sw Dr. (HP-11713A)
2.	Log Patt Gen (HP-8170A)	5.	Spec. Anal. (HP-8566A)	_ 8.	Plotter (HP-7475A)
3.	Computer (HP-9836S)	6.	Prog. Atten. (HP-84940	G) 9.	

Contractor:	Rockwell-Collins
Board Tested:	RF Synthesizer
Test Objective:	Verify proper spectral content of synthesizer
(4/15)Fo_output.	

	Input Name	Input Level	Equipment Used
1.	* Fo (3 inputs)	10.23MHz @ TBD	Signal Gen. (HP-8663A)
2.	** Time Mark Enable	TBD	Log Patt. Gen. (HP-8170A)
3.	** Code Gen. Reset Strobe	TBD	Log Patt. Gen. (HP-8170A)
4.	** Init F	TBD	Log Patt. Gen. (HP-8170A)
5.	** BIT IF Control	TBD	Log Patt. Gen. (HP-8170A)
6.	** 137/4 Fo Control	TBD	Log Patt. Gen. (HP-8170A)
7.	***		-
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup> Power splitter needed to provide these 3 inputs.

<sup>\*\*</sup> Breakout board needed to provide various levels for these 5 inputs.

	Output Name		Output Level		Equipment Used
1.	(4/15) F <sub>O</sub>	_	TBD	<u>_</u>	Spec. Anal. (HP-8566A)
2.		<del>-</del>			Prog. Atten. (HP-8494G)
3.		_			Att Sw Drive (HP-11713A)
4.					
5.				<del></del>	
<b>J</b> .		<del>-</del>		<del></del>	
Tes	t Procedure: Hoo	k up ur	nit under test as s	shown in	schematic. Turn
(	on test equipment. Se	t measu	rement equipment t	o proper	ranges. Apply
	proper signal levels t	o input	s of synthesizer b	ooard. M	leasure the
	spectral content of th				
	checking for spurious			•	cy stability etc.
	Repeat for the following	ng fred	quency outputs:	₽F0	/40 Fo
				‡Fo	1/100 Fo
Dat	a Reduction: Send	input	levels to printer.	. Output	of Spectrum
Ana	lyzer to plotter.				
		<del></del>			
				•	
Equ	ipment List:				
1.	Signal Cen. (HP-8663A)	4.	Printer (HP-26710	<u>3)</u> 7.	Att Sw Dr. (HP-11713A)
2.	Log Patt Gen (HP-8170A)	5.	Spec. Anal. (HP-8566A	8.	Plotter (HP-7475A)
3.	Computer (HP-9836S)	6.	Frog. Atten. (HP-8494	·G) 9.	

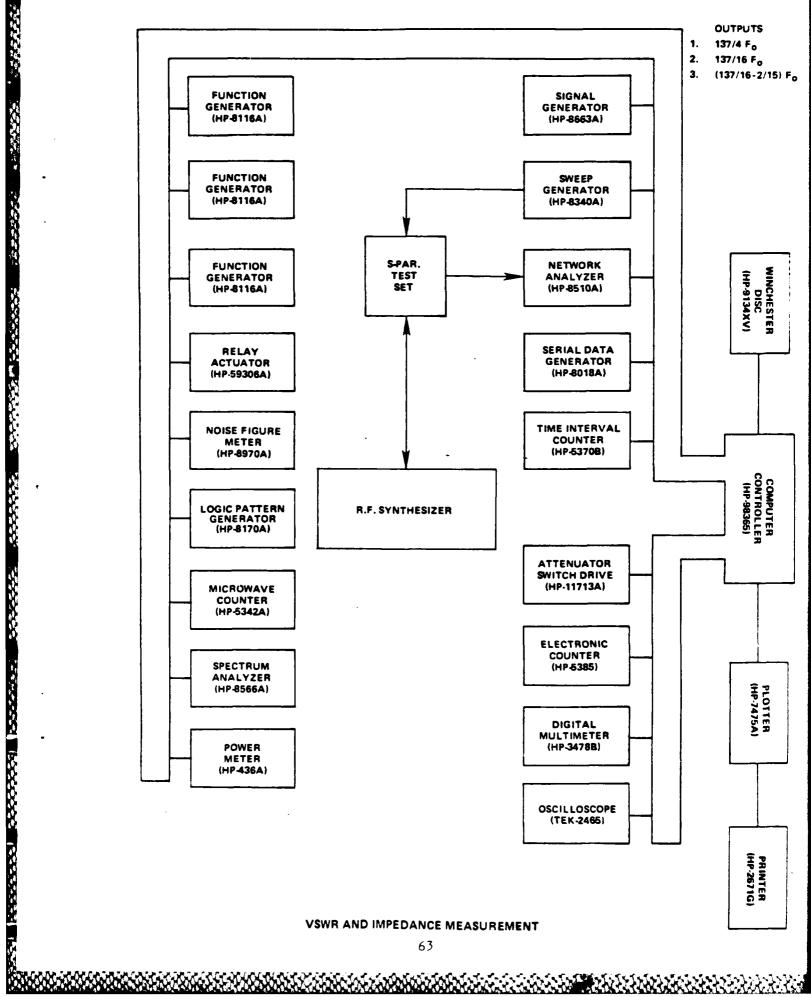
Contractor:  Board Tested:  Test Objective:		Rockwell-Collins				
		RF S	Synthesizer			
		Measure VSWR and impedance		of ( <sup>137</sup> 4)Fo output.		
	<del>"</del>	<del></del>		<del></del>		
	Inputs					
	Input Name		Input Level	Equipment Used		
1.	S-Par Test Set		TBD	Sweep Gen. (HP-8340A)		
2.						
3.		<u></u>				
4.						
5.				<del></del>		
6.		<del></del>		<u></u>		
7.				·		
8.						
9.						
10.						
11.						

years increased adopted transfer resident express the second resident assess transfer transfer trans-

12.

ned i bedeste i sectore describe service esperate combase. Persone espera

	Output Na	<u>me</u>	Output Lev	<u>el</u>	Equipment Used
1.	( <sup>137</sup> 4)Fo	·	TBD	<del></del>	Network Analyzer (HP-8510A)
2.	<del></del>				S-Par. Test Set (HP-8515A)
3.					
4.		<del></del>			
5.		<del></del>			
- •		<del></del>		<del></del>	
<u>lest</u>	Procedure:	Turn on	test equipment.	Set measur	ement equipment
to	proper ranges.	Apply inp	ut signal to S-P	arameter Tes	t Set from
Su	weep Generator.	Measure VS	WR and impedance	with Networ	rk Analyzer.
_					
<u> </u>			·	· - · · · · · · · · · · · · · · · · · ·	
	Reduction:	Send input	level to printe	r. Output o	f Network
Analy	zer to plotter.				
Equi	pment List:				
ι.	Computer (HP-9836S)	4.	S-Par. Test Set (H	?851 <u>5</u> A) 7.	
2.	Printer (HP-2671G)	5.	Network Anal. (HP-8	3510A) 8.	<del></del>
3.	Plotter (HP-7475A)	6.	Sweep Gen. (HP-8340	OA) 9.	



<pre>Contractor: Board Tested: Test Objective:</pre>		Rockwell-Collins				
		RF Synthesizer				
		Measure VSWR and impedance		( <sup>137</sup> 16)Fo output.		
	·		·	•		
		<del>.</del>		- <u></u>		
	Inputs					
	Input Name		Input Level	Equipment Used		
1.	S-Par. Test Set		TBD	Sweep Gen. (HP-8340A)		
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.		<del>_</del>				
11.	-	<del></del>				

12.

	Output Name	Output Level	Equipment Used
1.	( <sup>137</sup> 16)Fo	TBD	Network Analyzer (HP-8510A)
2.			S-Par. Test Set (HP-8515A)
3.			
4.			
5.			
ſest	Procedure: Turn o	n test equipment. Set mea	surement equipment
		input signal to S-Paramete	
		and impedance with Network	
			dif ao
·			
		put levels to printer. Ou	tput of Network
Analy	yzer to plotter.		·
Equi	pment List:		
l.	Computer (HP-9836S) 4	S-Par Test Set (HP-8515A)	7
2.	Printer (HP-2671G) 5	Network Anal. (HP-8510A)	8.
3.	Plotter (HP-7475A) 6	Sweep Cenerator (HP-8340A)	9.

<pre>Contractor: Board Tested: Test Objective:</pre>		Rockwell-Collins  RF Synthesizer  Measure VSWR and impedance of		
				c ( <sup>137</sup> /16 - 2/15)Fo
01	utput.			
	Inputs			
	Input Name	In	out Level	Equipment Used
1.	S-Par. Test Set	<u></u>	TBD	Sweep Generator (HP-8340A)
2.				
3.				
4.				
5.				
6.				
7.			-	
8.				
9.		<del></del>		
10.				
11.				

12.

	Output Name	<u>e</u>	Output Level		Equipment Used	1
1.	( <sup>137</sup> 16 <b>-</b> 2/15	)Fo_	TBD	_	Network Anal. (HP-8510A)	
2.				<del></del>	S-Par. Test Set (HP-8515	λA)
3.				<del></del>		
4.						
5.						
				_		
Test	Procedure:	Turn on to	est equipment. Set	measurem	ent equipment	
to	proper ranges.	Apply inpu	t signal to S-Parame	ter Test	Set from	
Sw	weep Generator. M	easure VSW	R and impedance with	Network	Analyzer.	
-						
		,				
Da+a	Peduction	Send input	levels to printer.	Output	of Naturaly	
		Scha Input	ievels to printer.	Output	or Necwork	
Anary	yzer to plotter.					
					<del></del>	
Equ1	pment List:					
1.	Computer (HP-9836S)	4.	S-Par Test Set (HP-8515A)	7.		
2.	Printer (HP-2671G)	5.	Network Anal. (HP-8510A)	8.		
3.	Plotter (HP-7475A)	6.	Sweep Gen. (HP-8340A)	9.		

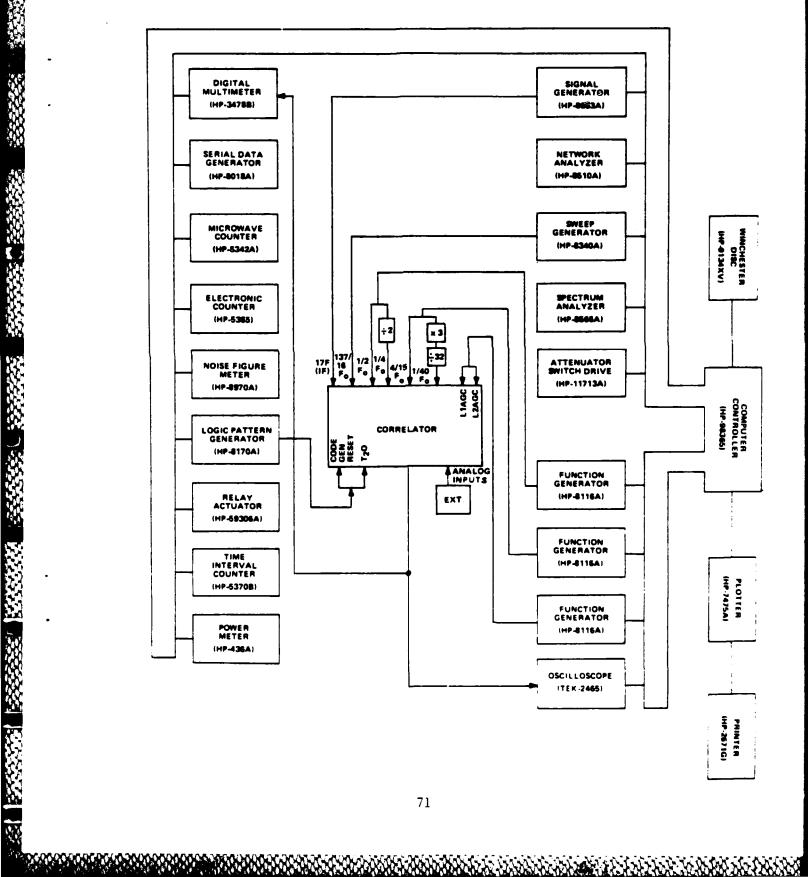
# 3.1.1.3 CORRELATOR MODULE

<u>Contractor</u> :	Rockwell-Collins
Board Tested:	Correlator
Test Objective:	Measure Receiver Local Bus output.

	Input Name	Input Level	Equipment Used
1.	17F(IF)	173.91MHz @ TBD	Signal Gen. (HP-8663A)
2.	Code Gen. Reset	TBD	Logic Patt. Cen. (HP-8170A)
3.	( <sup>137</sup> 16)Fo	87.594MHz @ TBD	Sweep Gen. (HP-8340A)
4.	( <sup>4</sup> 15)Fo	2.728MHz @ TBD	Function Gen. (HP-8116A)
5.	** (1/40) For	255.750Hz @ TBD	Function Gen. (HP-8116A)
6.	(½)F <sub>O</sub>	5.115MHz @ TBD	Function Gen. (HP-8116A)
7.	*(1/4)Fo	2.5575MHz @ TBD	Function Gen. (HP-8116A)
8.	T20	TBD	Logic Patt. Gen. (HP-8170A)
9.	L1 AGC	TBD	Function Gen. (HP-8116A)
10.	*** L2 AGC	TBD	Function Gen. (HP-8116A)
11.	Analog Inputs	TBD	External Source
12.			

<sup>\*</sup> Need divide by 2
\*\* Need multiply by 3, divide by 32
\*\* Need 2 way power divider

	Output Name		Output Level		Equipment	Used
1.	Receiver Local Bus	_	TBD		Digital Multi.	(HP-3478B)
2.		_			Oscilloscope (TEK-	-2465)
3.		-				
4.		-			<del></del>	
5.		_				
Test	Procedure: Tu	n on	test equipment. Set me	asure	ment equipment	_
to	proper ranges. Apply	prope	er signal levels to all	inpu	ts. Measure	_
Red	ceiver Local Bus outpo	ıt witl	n Digital Multimeter.	An Os	cilloscope will	_
be	used to display wave	form.				_
					· · · · · · · · · · · · · · · · · · ·	_
						_
		,				_
Data	Reduction: Sen	d inpu	t levels and output of	Digit	al Multimeter	
to p	rinter. Output of Os	cillos	cope to plotter.			
			<del></del>			
						_
Egui	pment List:					
1.	Computer (HP-9836S)	4.	Signal Gen. (HP-8663A)	7.	Printer (HP-26710	<u>G)</u>
2.(3)	Function Gens. (HP-8116A)	5.	Sweep Gen. (HP-8340A)	8.	Oscilloscope (TEK-	<u>-2465))</u>
3.	Log. Patt. Gen. (HP-8170A)	6.	Digital Multi. (HP-3478B)	9.	External Source	<del></del>
0.	Plotter (HP-7475A)					



Contractor:	Rockwell-Collins
Board Tested:	Correlator
Test Objective:	Verify Code Generator Reset Strobe operational.

Input Name	Input Level	Equipment Used
17F(IF)	173.91MHz @ TBD	Signal Gen. (HP-8663A)
Code Gen. Reset	TBD	Logic Patt. Gen. (HP-8170A)
( <sup>137</sup> /16) Fo	87.594MHz @ TBD	Sweep Gen. (HP-8340A)
( <sup>4</sup> /15) Fo	2.728MHz @ TBD	Function Gen. (HP-8116A)
## ( <sup>1/</sup> 40) Fo	255,750Hz @ TBD	Function Gen. (HP-8116A)
(½) Fo	5.115MHz @ TBD	Function Gen. (HP-8116A)
* (1) Fo	2.5575MHz • TBD	Function Gen. (HP-8116A)
T20	TBD	Logic Patt. Gen. (HP-8170A)
L1 AGC	TBD	Function Gen. (HP-8116A)
*** L2 AGC	TBD	Function Gen. (HP-8116A)
Analog Inputs	TBD	External Source
	17F(IF)  Code Gen. Reset  (137/16) Fo  (4/15) Fo  ** (1/40) Fo  (1/2) Fo  ** (1/4) Fo  T20  L1 AGC  *** L2 AGC	17F(IF) 173.91MHz @ TBD  Code Gen. Reset TBD  (137/16) Fo 87.594MHz @ TBD  (4/15) Fo 2.728MHz @ TBD  ** (1/40) Fo 255,750Hz @ TBD  (1/2) Fo 5.115MHz @ TBD  ** (1/4) Fo 2.5575MHz @ TBD  T20 TBD  L1 AGC TBD  *** L2 AGC

Need divide by 2 Need multiply be 3, divide by 32 Need 2 way power divider

	Output Name	Output Level	Equipment Used
1.	Code Gen. Reset Strobe	TBD	Digital Multi. (HP-3478B
2.			Oscilloscope (TEK-2465)
3.			
4.			
5.	<del></del>		
to Co	proper ranges. Apply	on test equipment. Set mea proper signal levels to all be output with Digital Mult play waveform.	inputs. Measure
	a Reduction: Send printer. Output of Osc	input levels and output of I	Digital Multimeter
Equ:	ipment List:		
1.	Computer (HP-9836S)	4. Signal Gen. (HP-8663A)	7. <u>Printer (HP-2671G)</u>
<b>2.</b> (3	Func. Cens. (HP-8116A)	5. <u>Sweep Gen. (HP-8340A)</u>	8. Oscilloscope (TEK-2465)
3.	Logic Patt. Gen. (HP-8170A)	6. <u>Digital Multi. (HP-3478B)</u>	9. <u>External Source</u>
٥.	Flotter (HP-7475A)		

<u>Contractor</u> :	Rockwell-Collins	
Board Tested:	Correlator	
Test Objective:	Verify Switch Select operational.	<del></del>

	Input Name	<u>Input Level</u>	Equipment Used
1.	17F(IF)	173.91MHz @ TBD	Signal Gen. (HP-8663A)
2.	Code Gen. Reset	TBD	Logic Patt. Gen. (HP-8170A)
3.	( <sup>137</sup> /16) Fo	87.594MHz @ TBD	Function Gen. (HP-8116A)
4.	( <sup>4</sup> /15) Fo	2.728MHz @ TBD	Function Gen. (HP-8116A)
5.	** ( <sup>1</sup> /40) Fo	255,750Hz @ TBD	Function Gen. (HP-8116a)
6.	(½) F <sub>O</sub>	5.115MHz @ TBD	Function Gen. (HP-8116A)
7.	* (½) F <sub>O</sub>	2.5575MHz @ TBD	Function Gen. (HP-8116A)
8.	T20	TBD	Logic Patt. Gen. (HP-8170A)
9.	L1 AGC	TBD	Function Gen. (HP-8116A)
10.	*** L2 AGC	TBD	Function Gen. (HP-8116A)
11.	Analog Inputs	TBD	External Source
12.		_	

Need divide by 2

Need multiply by 3, divide by 32 Need 2 way power divider

	Output Name		Output Level		Equipment Used
l.	Switch Select	-	TBD		Digital Multi. (HP-3478B
2.					Oscilloscope (TEX-2465)
3.					
4.		•			
5.		•			
<b>r</b> est	Procedure: Tur	n on t	est equipment. Set me	asure	ment equipment
			r signal levels to all		
			tal Multimeter. An Os		
use	ed to display waveform	ı <u>.                                    </u>			
		<del></del>		<del></del>	
			levels and output of D	igita.	l Multimeter
_to_	printer. Output of Os	cillos	cope to plotter.		
	······································	<u></u>			<del></del>
Equi	pment List:				·
	2			-	
l.	Computer (HP-9836S)		Sig. Gen. (HP-8663A)	7.	Printer (HP-2671G)
2.(3)	Func. Gens. (HP-8116A)	5.	Sweep Gen. (HP-8340A)	8.	Oscilloscope (TEK-2465)
3.	Logic Patt Gen (HP-8170A)	6.	Digital Multi. (HP-3478B)	9.	External Source
0.	Plotter (HP-7475A)				

3.1.1.4 IF PROCESSOR MODULE

Contractor:	Rockwell-Collins	
Board Tested:	IF Processor	
Test Objective:	Verify L1 AGC operational.	

	Input Name	Input Level	Equipment Used
1.	Switch Select Input 1	TBD	Logic Patt. Gen. (HP-8170A)
2.	Switch Select Input 2	TBD	Logic Patt. Gen. (HP-8170A)
3.	Switch Select Input 3	TBD	Logic Patt. Gen. (HP-8170A)
4.	Switch Select Input 4	TBD	Logic Patt. Gen. (HP-8170A)
5.	Switch Select Input 5	TBD	Logic Patt. Gen. (HP-8170A)
6.	L1 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
7.	L2 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
8.	Noise Diode Control	TBD	Logic Patt. Gen. (HP-8170A)
9.	BIT Fo	TBD	Function Generator (HP-8116A)
10.	BIT Code	TBD	*In-house Generator
11.	L1 Coax	TBD	Signal Gen. (HP-8663A)
12.	L2 Coax	TBD	Signal Gen. (HP-8663A)
13.	( <sup>137</sup> /4) Fo	350.3775MHz @ TBD	Sweep Gen. (HP-8340A)

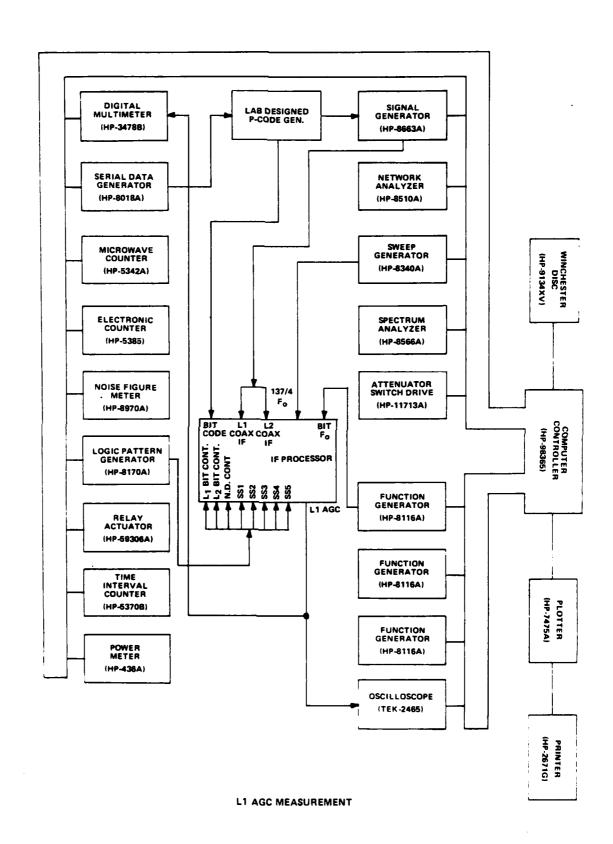
<sup>\*</sup> In-house designed P-Code Generator (may also need C/A Code Generator)

	Output Na	me	Output Level		Equipment Used
1.	L1 AGC		TBD		Digital Multi. (HP-3478B)
2.		<del></del>			Oscilloscope (TEK-2465)
3.					
4.					
5.				<del></del>	
Test	Procedure:	Turn on	test equipment. Set r	measure	ment equipment
to	proper ranges.	Apply prop	er signal levels to a	ll inpu	ts. Measure
L1	AGC output with	Digital Mu	ltimeter. An Oscillo:	scope w	ill be used to
dis	splay waveform.				
					· ·
Data	Reduction:	Send innu	t levels and output of	f Diøit	al Multimeter
			scope to plotter.		
<u> </u>	or inter: Output	<u>or oscillo</u>	scope to protter.		
				<u>.</u> .i	
F					
Equi	pment List:				
1.	Computer (HP-98)	36S) <b>4</b> .	Signal Cen. (HP-8663A)	7.	Digital Multi. (HP-3478B)
2.	Log. Patt Cen (HP-	B170A) 5.	Sweep Gen. (HP-8340A)	8.	Oscilloscope (TEK-2465)
3.	Function Gen. (HP-6	B116A) 6.	Printer (MP-2671G)	9.	In-house Design

Plotter (HP-7475A)

Serial Data Gen. (HP-8018A) 12.

10.

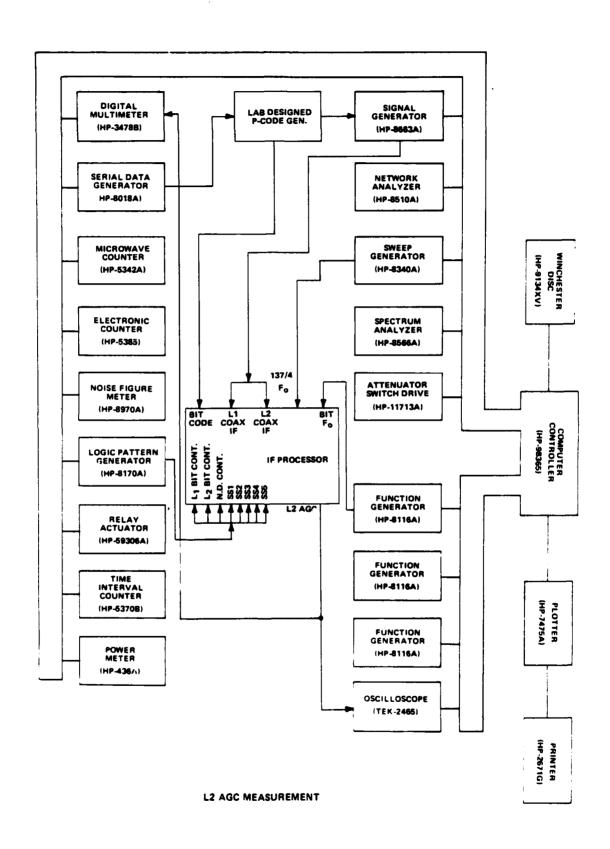


Contractor:	Rockwell-Collins	
Board Tested:	IF Processor	
Test Objective:	Verify L2 AGC operational.	
•		

	Input Name	Input Level	Equipment Used
1.	Switch Select Input 1	TBD	Logic Patt. Gen. (HP-8170A)
2.	Switch Select Input 2	TBD	Logic Patt. Cen. (HP-8170A)
3.	Switch Select Input 3	TBD	Logic Patt. Gen. (HP-8170A)
4.	Switch Select Input 4	TBD	Logic Patt. Gen. (HP-8170A)
5.	Switch Select Input 5	TBD	Logic Patt. Gen. (HP-8170A)
6.	L1 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
7.	L2 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
8.	Noise Diode Control	TBD	Logic Patt. Gen. (HP-8170A)
9.	BIT Fo	TBD	Function Generator (HP-8116A)
10.	BIT Code	TBD	*In-house Generator
11.	L1 Coax	TBD	Signal Gen. (HP-8663A)
12.	L2 Coax	TBD	Signal Gen. (HP-8663A)
13.	( <sup>137</sup> /4) Fo	350.3775MHz @ TBD	Sweep Gen. (HP-8340A)

<sup>\*</sup> In-house designed P-Code Generator (may also need C/A Code Generator)

	Output Name		Output Level		Equipment Used
1.	L2 AGC	_	TBD		Digital Multi. (HP-3478B
2.		_		<del></del>	Oscilloscope (TEK-2465)
3.		<del></del>			
4.		_	<del></del>	_	
5.		-		_	
<b>.</b>	to Durana durana a mu		test soutement Cet		
	t Procedure: Tu				
	proper ranges. Apply				
	AGC output with Digit. splay waveform.	ai Mui	timeter. An Oscillos	cope wi	II be used to
<u>urs</u>	spray waverorm.				
		<u> </u>			<del></del>
					<del></del>
		<del></del>			
	a Reduction: Se	-			tal Multimeter
to	printer. Output of C	scill	oscope to plotter.	<del></del>	
					<del></del>
Equ	ipment List:				
1.	Computer (HP-9836S)	4.	Signal Gen. (HP-8663A)	7.	Digital Multi. (HP-3478B)
2.	Log. Patt Gen (HP-8170A)	5.	Sweep Cen. (HP-8340A)	8.	Oscilloscope (TEK-2465)
3.	Function Gen. (HP-8116A)	6.	Printer (HP-2671G)	9.	In-house Design
Ο.	Serial Data Gen. (HP-8018A	1) 12.	Plotter (HP-7475A)		

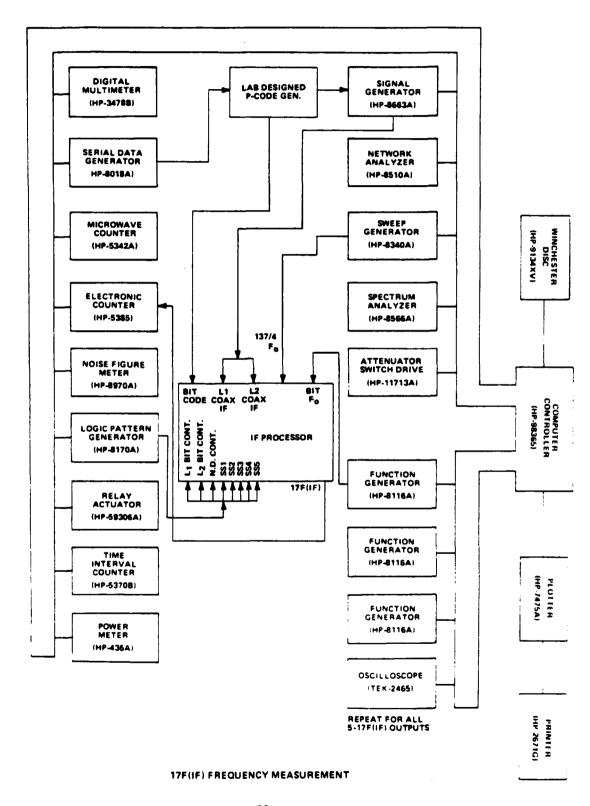


Contractor:	Rockwell-Collins	
Board Tested:	IF Processor	
Test Objective:	Measure 17F(IF) output frequency.	

	<u>Input Name</u>	Input Level	Equipment Used
1.	Switch Select Input 1	TBD	Logic Patt. Gen. (HP-8170A)
2.	Switch Select Input 2	TBD	Logic Patt. Gen. (HP-8170A)
3.	Switch Select Input 3	TBD	Logic Patt. Gen. (HP-8170A)
4.	Switch Select Input 4	TBD	Logic Patt. Gen. (HP-8170A)
5.	Switch Select Input 5	TBD	Logic Patt. Gen. (HP-8170A)
6.	L1 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
7.	L2 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
8.	Noise Diode Control	TBD	Logic Patt. Gen. (HP-8170A)
9.	BIT Fo	TBD	Logic Patt. Gen. (HP-8170A)
10.	BIT Code	TBD	* In House Generator
11.	L1 Coax	TBD	Signal Generator (HP-8663A)
12.	L2 Coax	TBD	Signal Generator (HP-8663A)
13.	(137/4) Fo	350.3775MHz @ TBD	Sweep Generator (HP-8340A)

<sup>\*</sup> In-House designed P-Code Generator (may also need C/A Code Generator)

Outputs		
Output Name	Output Level	Equipment Used
1. 17F(IF)	173.91MHz	Electronic Ctr (HP-5385)
2.		
3.		
4.		
5		
Tunn o	n toot equipment. Set men	one and any import
	n test equipment. Set mea	
to proper ranges. Apply p	roper signal levels to all	inputs. Measure
17F(IF) output frequency w	ith Electronic Counter. (	Repeat for all 5
17F(IF) outputs).		
	put levels and output of E	Clectronic Counter
Data Reduction: Send in	put levels and output of E	Clectronic Counter
	put levels and output of E	Electronic Counter
Data Reduction: Send in	put levels and output of E	Clectronic Counter
Data Reduction: Send in	put levels and output of E	Clectronic Counter
Data Reduction: Send in to printer.	put levels and output of E	Clectronic Counter
Data Reduction: Send in	put levels and output of E	Clectronic Counter
Data Reduction: Send in to printer.  Equipment List:	put levels and output of E	7. <u>In-House Design</u>
Data Reduction: Send in to printer.  Equipment List:	Signal Gen. (HP-8663A)	
Data Reduction: Send in to printer.  Equipment List:  1. Computer (HP-9836S) 4  2. Logic Patt. Gen. (HP-8170A) 5	Signal Gen. (HP-8663A) Printer (HP-2671G)	7. <u>In-House Design</u> 8. <u>Electronic Ctr (HP-5385)</u>
Data Reduction: Send in to printer.  Equipment List:  1Computer (HP-9836S) 4  2Logic Patt. Gen. (HP-8170A) 5	Signal Gen. (HP-8663A)  Printer (HP-2671G)	7. <u>In-House Design</u> 8. <u>Electronic Ctr (HP-5385)</u>
Data Reduction: Send in to printer.  Equipment List:  1. Computer (HP-9836S) 4  2. Logic Patt. Gen. (HP-8170A) 5	Signal Gen. (HP-8663A) Printer (HP-2671G)	7. <u>In-House Design</u> 8. <u>Electronic Ctr (HP-5385)</u>
Data Reduction: Send in to printer.  Equipment List:  1. Computer (HP-9836S) 4  2. Logic Patt. Gen. (HP-8170A) 5	Signal Gen. (HP-8663A) Printer (HP-2671G)	7. <u>In-House Design</u> 8. <u>Electronic Ctr (HP-5385)</u>
Data Reduction: Send in to printer.  Equipment List:  1. Computer (HP-9836S) 4  2. Logic Patt. Gen. (HP-8170A) 5	Signal Gen. (HP-8663A) Printer (HP-2671G)	7. <u>In-House Design</u> 8. <u>Electronic Ctr (HP-5385)</u>



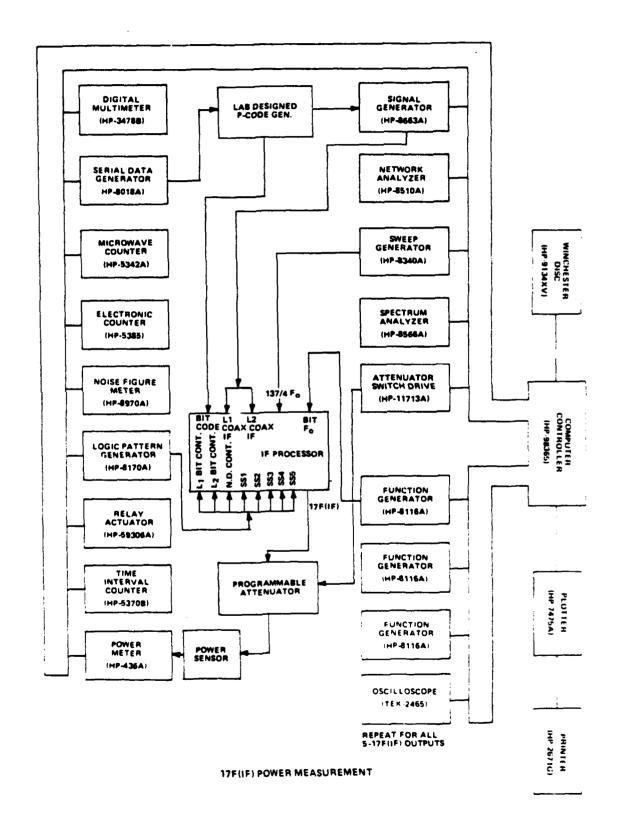
Contractor:	Rockwell-Collins	
Board Tested:	IF Processor	
Test Objective:	Measure output power of 17F(IF) output.	
		_

	Input Name	Input Level	Equipment Used
1.	Switch Select Input 1	TBD	Logic Patt. Gen. (HP-8170A)
2.	Switch Select Input 2	TBD	Logic Patt. Gen. (HP-8170A)
3.	Switch Select Input 3	TBD	Logic Patt. Gen. (HP-8170A)
4.	Switch Select Input 4	TBD	Logic Patt. Gen. (HP-8170A)
5.	Switch Select Input 5	TBD	Logic Patt. Gen. (HP-8170A)
6.	L1 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
7.	L2 BIT Control	TBD	Logic Patt. Gan. (HP-8170A)
8.	Noise Diode Control	TBD	Logic Patt. Gen. (HP-8170A)
9.	BIT Fo	TBD	Function Generator (HP-8116A)
10.	BIT Code	TBD	* In House Generator
11.	L1 Coax	TBD	Signal Generator (HP-8663A)
12.	L2 Coax	TBD	Signal Generator (HP-8663A)
13.	(137/4) Fo	350.3775MHz @ TBD	Sweep Generator (HP-8340A)

<sup>\*</sup> In-House designed P-Code Generator (may also need C/A Code Generator)

constant interest literature hospitals leavester.

	Output Name		Output Level		Equipment Used
1.	17F(IF)	_	TBD	_	Power Meter (HP-436A)
2.		·			Power Sensor (HP-8481A)
3.		_			Att. Sw Drive (HP-11713A)
4.		_		_	Prog. Att. (HP-8494G)
5.		_		_	
•	t Procedure: To proper ranges. Apply		test equipment. Set		
01	utput power of 17F(IF)	outpu	t with Power Meter.	(Repeat	for all 5
1′	7F(IF) outputs)	•			
pı			t levels and output of		Meter to
1.	Computer (HP-9836S)	4.	Signal Gen. (HP-8663A)	7.	In-House Design
2.	Logic Patt Cen (HP-8170A)		Printer (HP-2671G)	8.	Serial Data Cen. (HP-801SA)
3.	Func. Gen. (HP-8116A)		Sweep Gen. (HP-8340A)	9.	Power Meter (HP-436A)
0.			Att. Sw Dr. (HP-11713A)	12.	<del></del>

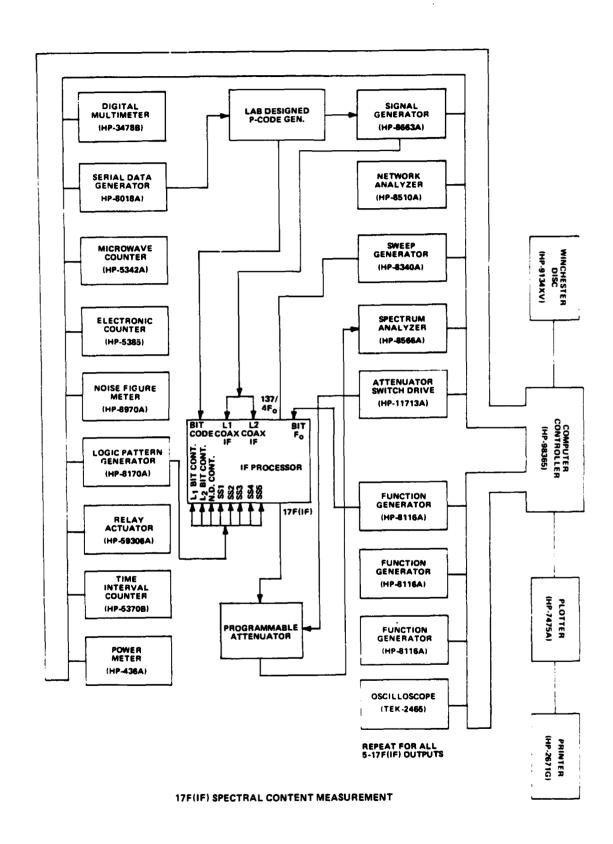


Contractor:	Rockwell-Collins	
Board Tested:	IF Processor	
Test Objective:	Measure spectral content of 17F(IF) output.	
·	•	

	Input Name	Input Level	Equipment Used
1.	Switch Select Input 1	TBD	Logic Patt. Gen. (HP-8170A)
2.	Switch Select Input 2	TBD	Logic Patt. Gen. (HP-8170A)
3.	Switch Select Input 3	TBD	Logic Patt. Gen. (HP-8170A)
4.	Switch Select Input 4	TBD	Logic Patt. Gen. (HP-8170A)
5.	Switch Select Input 5	TBD	Logic Patt. Gen. (HP-8170A)
6.	L1 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
7.	L2 BIT Control	TBD	Logic Patt. Gen. (HP-8170A)
8.	Noise Diode Control	TBD	Logic Patt. Gen. (HP-8170A)
9.	BIT Fo	TBD	Function Generator (HP-8116A)
10.	BIT Code	TBD	* In-House Generator
11.	L1 Coax	TBD	Signal Cenerator (HP-8663A)
12.	L2 Coax	TBD	Signal Generator (HP-8663A)
i0.	(137/4) Fo	350.3775MHz @ TBD	Sweep Generator (HP-8340A)

<sup>\*</sup> In-House designed P-Code Generator (may also need C/A Code Generator)

	Output Name		Output Level		Equipment Used
. •	17F(IF)	_	173.91MHz @ TBD		Spectrum Analyzer (HP-8566A)
2.		_			Att. Sw Drive (HP-11713A)
3.		_			Prog. Att. (HP-8494G)
١.		_		<del>_</del>	
· .		_		<del></del>	
		_		_	
est.	Procedure: Tu	ırn on	test equipment. Set	measur	ement equipment
	proper ranges. Apply	, prop	er signal levels to a	ll inpu	its. Measure
	ectral content of 17F				
	1 5 17F(IF) outputs)				
		·		- · · · · · · · - <del></del> ·	
			· · · · · · · · · · · · · · · · · · ·		
			<del></del>		
<b>&gt;_ 4</b>	Seno	innu	t levels to printer.	Output	of Spectrum
	Reduction: Send	1 11104	to levels to printer.	Output	or opecorum
Alla	ilyzer to protter.				
Equ:	ipment List:				
l .	Camputer (HP-9836S)	4.	Signal Cen. (HP-8663A)	7.	In-House Design
2.	Logic Patt Gen (HP-8170A)	5.	Printer (HP-2671G)	8.	Serial Data Gen (HP-8018A)
3.	Func. Gen. (HP-8116A)	6.	Sweep Gen. (HP-8340A)	9.	Spectrum Anal. (HP-8566A)
ο.	Att. Sw Dr. (HP-11713A)	11.	Prog. Att. (HP-8494G)	12.	Plotter (HP-7475A)



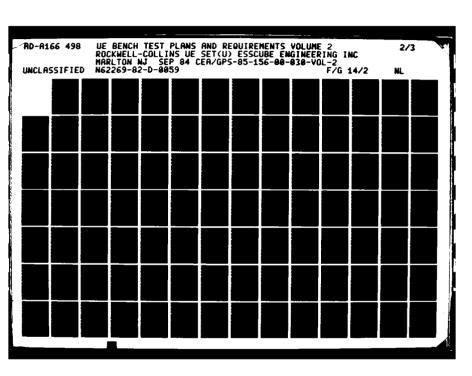
TO SERVICE TO SERVICE SERVICES (SERVICES SERVICES SERVICES SERVICES)

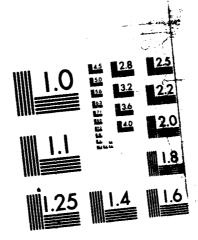
Contractor:	Rockwell-Collins
Board Tested:	IF Processor
Test Objective:	Measure output impedance and VSWR of 17F(IF)
output.	

the process of the second of t

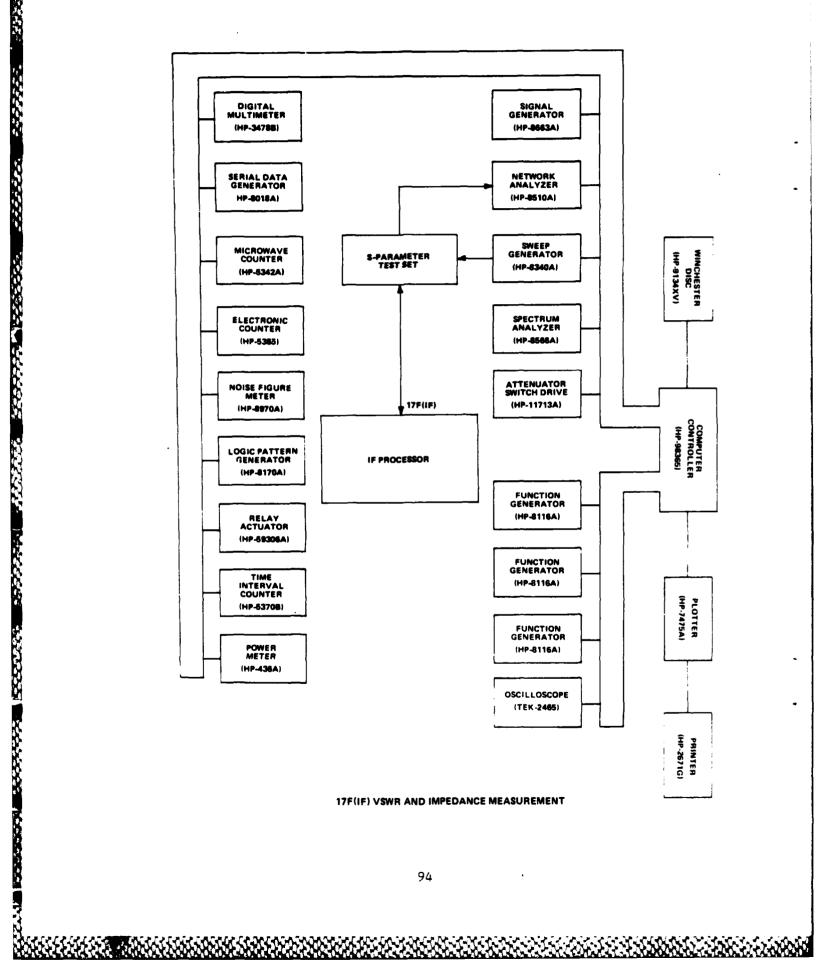
	Input Name	Input Level	Equipment Used
1.	S-Par Test Set	TBD	Sweep Gen. (HP-8340A)
2.	S-rai Test Set		Sweep den. (III -03-0A/
3.			
4.			
5.			
6.		•	
7.		<del></del>	
8.			
9.			<del></del>
10.			
11.			
12.		·	

	•			
	Output Name		Output Level	Equipment Used
1.	17F(IF)		TBD	Network Analyzer (HP-8510A)
2.		_		S-Par. Test Set (HP-8515A)
3.		_		
4.				
5.				
Test	Procedure: Tu	ırn on	test equipment. Set me	easurement equipment
to	proper ranges. Appl	y inpu	t signal to S-Parameter	r Test Set from
Sw	eep Generator. Measu	re VSW	R and impedance with Ne	etwork Analyzer.
	epeat for all 5 17F(I			
		<del></del>		
		· - · · · ·		
Data	Reduction: S	end in	out levels to printer.	Output of Network
Ana	lyzer to plotter.			
	•			
Equi	ipment List:			
1.	Camputer (HP-9836S)	4.	S-Par Test Set (HP-8515A)	7
2.	Printer (HP-2671G)	5.	Network Anal. (HP-8510A)	8.
3.	Plotter (HP-7475A)	6.	Sweep Gen. (HP-8340A)	9.





MICROCOPY RESOLUTION TEST CHARE
NATE WAS BUREAU-OF STANDARDS THESE A.



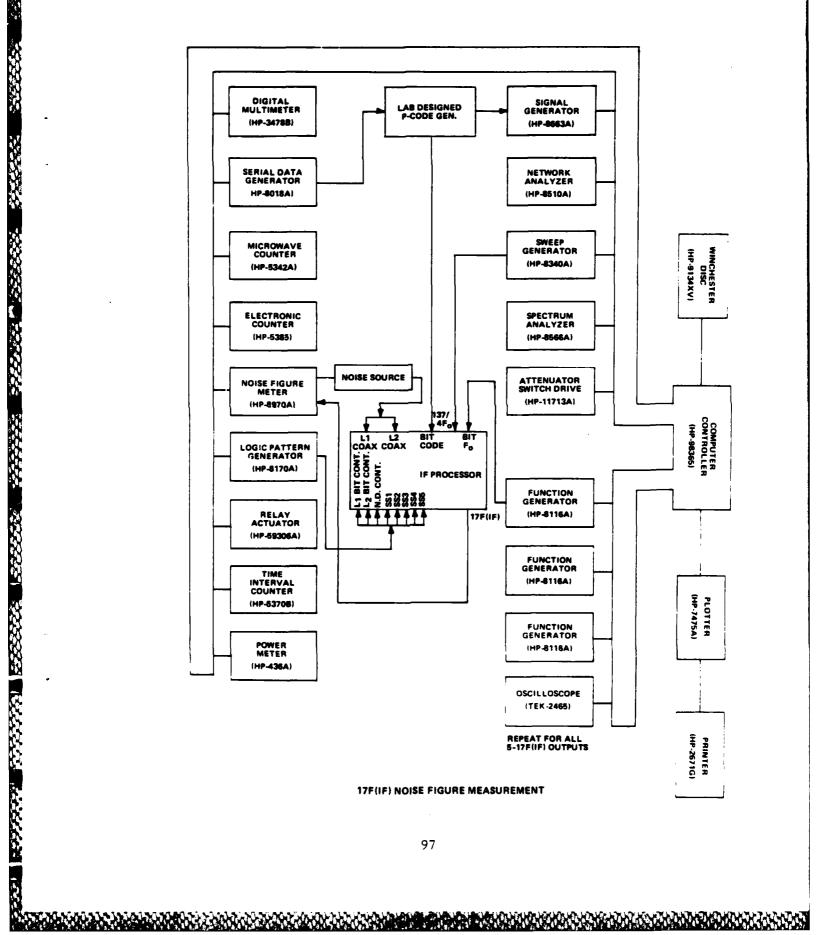
<u>Contractor</u> :	Rockwell-Collins	
Board Tested:	IF Processor	
Test Objective:	Measure noise figure of 17F(IF) outputs.	
<del></del>	<u> </u>	

CALL BOCK OF A PERSONNEL PROPERTY PROPERTY CONTRACTOR C

	Input Name	Input Level	Equipment Used
1.	Switch Select Input 1	TBD	Logic Patt. Cen. (HP-8170A)
2.	Switch Select Input 2	TBD	Logic Patt. Gen. (HP-8170A)
3.	Switch Select Input 3	TBD	Logic Patt. Cen. (HP-8170A)
4.	Switch Select Input 4	TBD	Logic Patt. Cen. (HP-8170A)
5.	Switch Select Input 5	TBD	Logic Patt. Cen. (HP-8170A)
6.	L1 BIT Control	TBD	Logic Patt. Cen. (HP-8170A)
7.	L2 BIT Control	TBD	Logic Patt, Gen. (HP-8170A)
8.	Noise Diode Control	TBD	Logic Patt. Gen. (HP-8170A)
9.	BIT Fo	TBD	Function Generator (HP-8116A)
10.	BIT Code	TBD	* In-House Generator
11.	L1 Coax	TBD	Noise Source (HP-346B)
12.	L2 Coax	T3U	Noise Source (HP-346B)
13.	(137/4) Fo	350.3775MHz @ TBD	Sweep Generator (HP-8340A)

<sup>\*</sup> In-House designed P-Code Generator (may also need C/A Code Generator)

	Output Name		Output Level		Equipment Used
1.	17F(IF)		TBD		Noise Figure Meter (HP-8970A)
2.					
3.					
4.					
5.			<del></del>		
Test	t Procedure: Turn	n on	test equipment. Set me	asure	ement equipment
to	proper ranges. Apply	prop	er signal levels to all	inpu	its. Turn on
no	ise source. Measure no	oise	figure with Noise Figur	e Met	ter. (Repeat for
al	1 5 17F(IF) outputs)		Name of the state		
	······································				····
			, <u></u>		
Data	Reduction: Send	inpu	t levels and output of	Noise	e Figure Meter
to	printer.				
Equ:	ipment List:				
1.	Computer (HP-9836S)	4.	Ser. Data Cen. (HP-8018A)	7.	Signal Cen. (HP-8663A)
2.	Printer (HP-2671G)	5.	Sweep Gen. (HP-8340A)	8.	In House Design
3.	Logic Patt Gen (HP-8170A)	6.	Function Gen. (HP-8116A)	9.	Noise Source (HP-346B)
10.	Noise Fig. Meter (HP-8970A	١)			

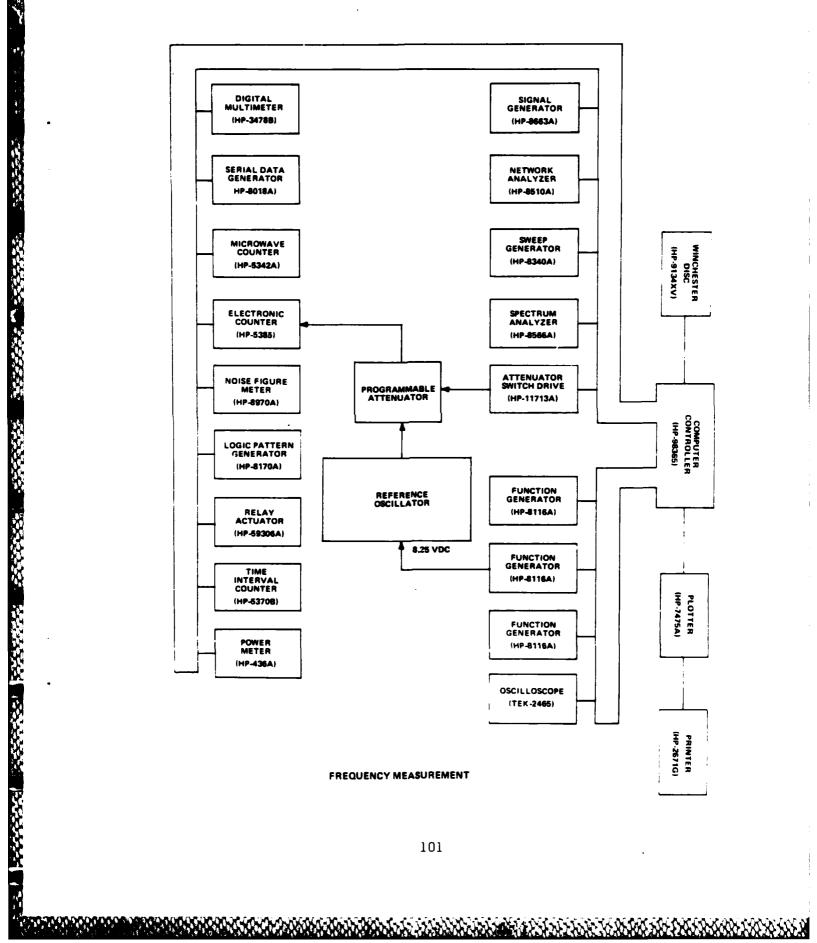


3.1.1.5 REFERENCE OSCILLATOR MODULE

Contr	Contractor: Rockwell-Collins			
Board Tested:		Reference Oscillator		
Test	Objective:	Meas	sure output frequency	
		<del></del>		
		<u>-</u>	· · · · · · · · · · · · · · · · · · ·	
	Inputs			
	Input Name		Input Level	Equipment Used
	DC Input		8.25VDC	Function Gen. (HP-8116A
2				<del></del>
3				
4		<del></del>		
5		<del></del>		
6				
7			<del></del>	
8				
9				•
10				
11				
_				

12.

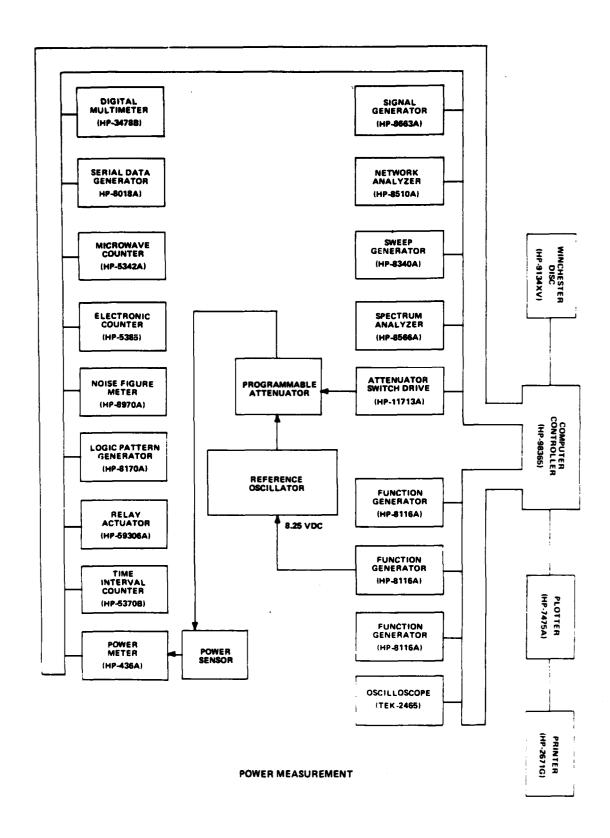
	Output Name		Output Level	Equipment Used
1.	. Fo	<b></b>	10.23MHz	Electronic Ctr. (HP-5385
2.		_		Att. Sw Drive (HP-11713A)
3.				Prog. Att. (HP-8494G)
4.		-		
5.				
		_		
Test	Procedure: Tu	n on	test equipment. Set m	neasurement equipment
to p	proper ranges. Apply	a DC	Voltage to input of Re	eference Oscillator.
Meas	sure output frequency	with	Electronic Counter.	
				<del></del>
•				
		•	·	
			<del></del> -	
		<del></del>		
				0.73
		ia inp	ut levels and output o	i Electronic Counter
_to_p	orinter.			<u></u>
	-			
Equi	pment List:			
1.	Computer (HP-9836S)	4.	Electronic Ctr. (HP-5385)	7.
2.	Printer (HP-2671G)	5.	Att Sw Dr. (HP-11713A)	8.
3.	Function Gen. (HP-8116A)	6.	Prog. Att. (HP-8494G)	9.



Board Tested: Test Objective:		HOCKWEIT-COITINS		
		Reference Oscillator		
		Measure output power		
			<del></del>	
	Tanuta			
	<u>Inputs</u>	Touch Tours	Davisansk Davis	
	Input Name	Input Level	Equipment Used	
1.	DC_Input	8.25VDC	Function Gen. (HP-8116A	
_	DC Input			
3.				
4.				
5.				
6.				
7.				
8.		<del></del>		
9.				
10.				
11.	,			

12.

	Output Name		Output Level	Equipment Used
l	Fo		OdBm .	Power Meter (HP-436A)
2		<del></del>		Power Sensor (HP-8481)
3	······		·	Att. Sw Drive (HP-11713A)
4	· · · · · · · · · · · · · · · · · · ·			Prog. Att. (HP-8494G)
5				_
to pi		Ly a DC		easurement equipment eference Oscillator.
			•	
Data	Reduction: Ser	nd input	levels and output of	Power Meter to printer.
Equip	ment List:			
· _	Camputer (HP-9836S)	4.	Power Meter (HP-436A)	7. <u>Prog. Att. (HP-8494G)</u>
2	Printer (HP-2671G)	5.	Power Sensor (HP-8481G)	8
3. <u>F</u>	Tunc. Gen. (HP-8116A)	6.	Att. Sw Dr. (HP-11713A)	9



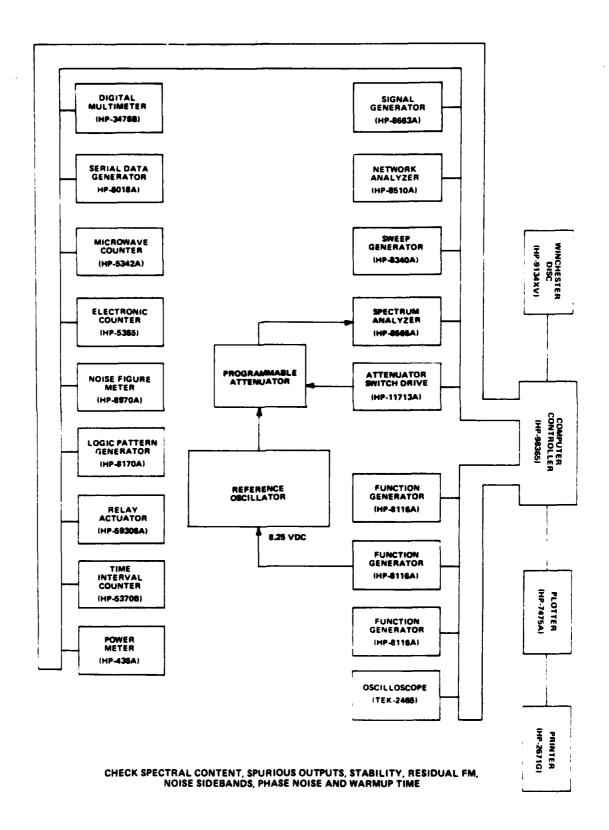
SCHOOL STATE

Postarior.

en herreneral lispectora inferentia presidenti condede sevesidade lispectora

<pre>Contractor: Board Tested: Test Objective:</pre>		Rockwell-Collins	
		Reference Oscillator	
		Measure spectral content of	foutput signal.
	<del></del>		
	<del></del>		
	Inputs		
	Input Name	Input Level	Equipment Used
1	20.5		
1. 2.	DC Input		Function Gen. (HP-8116A)
3.			
4.			
5.			
6.			
7.			-
8.			
9.			
10.			
11.			
12.			

	Output Name		Output Level		Equipment Used
١.	Fo ·		10.23MHz @ OdBm		Spectrum Anal. (HP-8566A)
2.					Att. Sw Drive (HP-11713A)
3.					Prog. Att. (HP-8494G)
ł .					
5.					
Cest	: Procedure: Tur	n on	test equipment. Set m	easure	ement equipment_
to p	proper ranges. Apply a	DC V	oltage to input of Ref	erence	e Oscillator.
			put signal with Spectr		
	·				
				<del></del>	
<b>.</b>	. Deduction		h 1		26. 0
		<u>inpu</u>	t level to printer. Ou	itput	or Spectrum
Ana	alyzer to plotter.			<del></del>	
· <del></del>					<del></del>
Equi	pment List:				
l .	Computer (HP-9836S)	4.	Spectrum Anal. (HP-8566A)	7.	Plotter (HP-7475A)
2.	Printer (HP-2671G)	5.	Att. Sw Dr. (HP-11713A)	8.	
2	Pinotion Con (UD_9116A)	6	Dem cr A++ (UD-8/:0/:C)	q	



Contractor:	Rockwell-Collins	
Board Tested:	Reference Oscillator	
Test Objective:	Check oscillator output for	stability, residual
FM, noise sidebands and	phase noise.	· · · · · · · · · · · · · · · · · · ·

### Inputs

Consider Consideration (Consideration (Consideration Consideration) (Consideration) (Consideration)

	Input Name	Input Level	Equipment Used
1.	DC Input	8.25VDC	Function Gen. (HP-8116A)
2.			
3.			
4.			
5.			
6.			
7.			
8.	-		
9.			
10.			
11.			
12.			

	Output Name		Output Level		Equipment Used
1.	Fo.	_	TBD		Spectrum Anal. (HP-8566A
2.		_			Att. Sw Drive (HP-11713A)
3.		_			Prog. Att. (HP-8494G)
4.		_			
5.					
Test	t Procedure: T	urn o	n test equipment. Set	measu	rement equipment
to	proper ranges. Apply	a DC 1	oltage to input of Ref	erenc	e Oscillator.
Mea	sure short and long te	rm sta	ability, phase noise, n	oise	sidebands,
and	residual FM at oscill	ator (	output.		
			<del></del>		
					· · · · · · · · · · · · · · · · · · ·
					- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Data	a Reduction: Send	l inpu	t levels to printer. O	utput	of Spectrum
	alyzer to plotter.				
	-J				•
			**************************************		1,0,
Fau	ipment List:				
<u>rqu.</u>	ipment hist.				
1.	Computer (HP-9836S)	4.	Plotter (HP-7475A)	7.	Prog. Att. (HP-8494G)
2.	Printer (HP-2671G)	5.	Spectrum Anal. (HP-8566A)	8.	
3.	Function Gen. (HP-8116A)	6.	Att. Sw Dr. (HP-11713A)	9.	

Contractor.	ROCKWEIT-COTTINS
Board Tested:	Reference Oscillator
Test Objective:	Verify within specification operation of oscillator
after 5 minute warm-up.	<del></del>

#### Inputs

AND DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTIONS DESCRIPTION D

	Input Name	Input Level	Equipment Used
1.	DC Input	8.25VDC	Function Gen. (HP-8116A)
2.			
3.			
4.			
5.		<del></del>	
6.	<u></u>		
7.			
8.	:		
9.		<del></del>	
10.			
11.			
12.			

	Output Name		Output Level	Equipment Used
1.	Fo			Spectrum Anal. (HP-8566A
2.		_		Att. Sw Dr. (HP-11713A)
3.		_		Prog. Att. (HP-8494G)
4.				
5.		<del></del>		
Tes	t Procedure: Tu	rn on t	est equipment. Set m	easurement equipment
to	proper ranges. Apply			
-	ter 5 minute specifica		-	
	alyzer to verify prope			
		<u>.</u>		
	· · · · · · · · · · · · · · · · · · ·			
<b>D</b> = <b>+</b>	o Doduction. Sen	d input	level to printer. O	itnut of Spectrum
	a Reduction: Sen	<u>a inpat</u>	rever to printer.	reput of Spectrum
AII	aryzer to protter.		<u> </u>	
			· · · · · · · · · · · · · · · · · · ·	
Equ	ipment List:			
1.	Camputer (HP-9836S)	4.	Plotter (HP-7475A)	7. Prog. Att. (HP-8494G)
2.	Printer (HP-2671G)	5.	Spectrum Anal. (HP-8566A)	8
3.	Function Gen. (HP-8116A)	6.	Att. Sw Dr. (HP-11713A)	9.

Board Tested:	Reference Oscillator		
Test Objective:	Verify Standard Fault operation.		_
			_
			_
Inputs			
Input Name	Input Level	Equipment Us	<u>ed</u>
1. DC Input	8.25VDC	Function Gen. (HP-	-8116A)
2.			
_			

Rockwell-Collins

Contractor:

5.

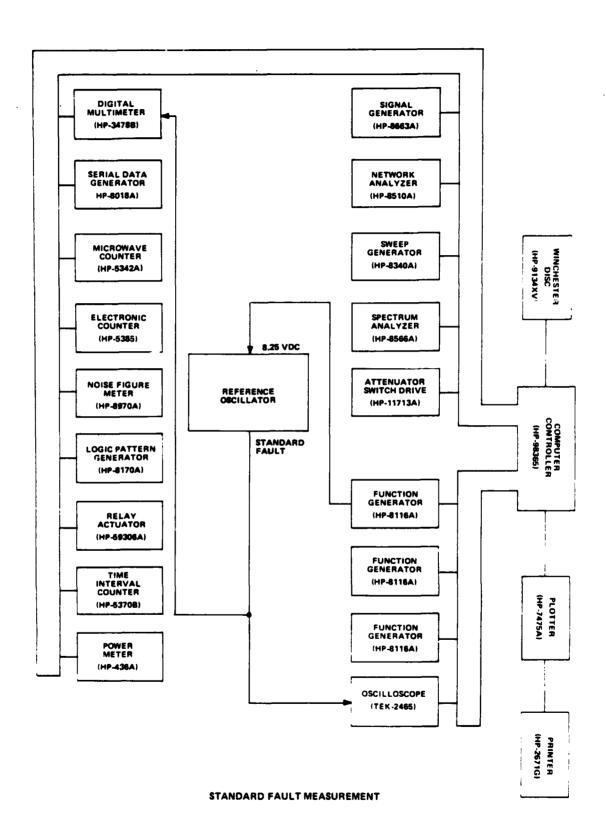
8.

10.

11.

12.

	Output Name		Output Level	Equipment Used
l.	Standard Fault ou	tput	TBD	Digital Multi. (HP-3478B
2.				Oscilloscope (HP-2465)
3.				
4.		<del></del>		
5.		<del></del>		
rest	Procedure:	lurn on f	test equipment. Set m	neasurement equipment
		y a DC V	Voltage to Reference (	Scillator input.
			with Digital Multimete	
	L be used to display			
"	be abou to arspray	waveror	, 114	<del></del>
	<del> </del>	<del></del>		
Data	Reduction: S	end inpu	ut level and output of	Digital Multimeter
to p	orinter. Output of	Oscillos	scope to plotter.	
Equi	pment List:			
1	Committee (IT) 202(C)	A	District Market (III) 240000	. 7
1.	Computer (HP-9836S)	=	Digital Multi. (HP-3487B)	
2.	Printer (HP-2671G)	<sub>-</sub> 5.	Oscilloscope (TEK-2465)	8.
2	Exaction Con /UD-9116A	١ 6	Plotter (HP_7/75A)	<b>9</b> .



3.1.1.6 ANTENNA ELECTRONICS

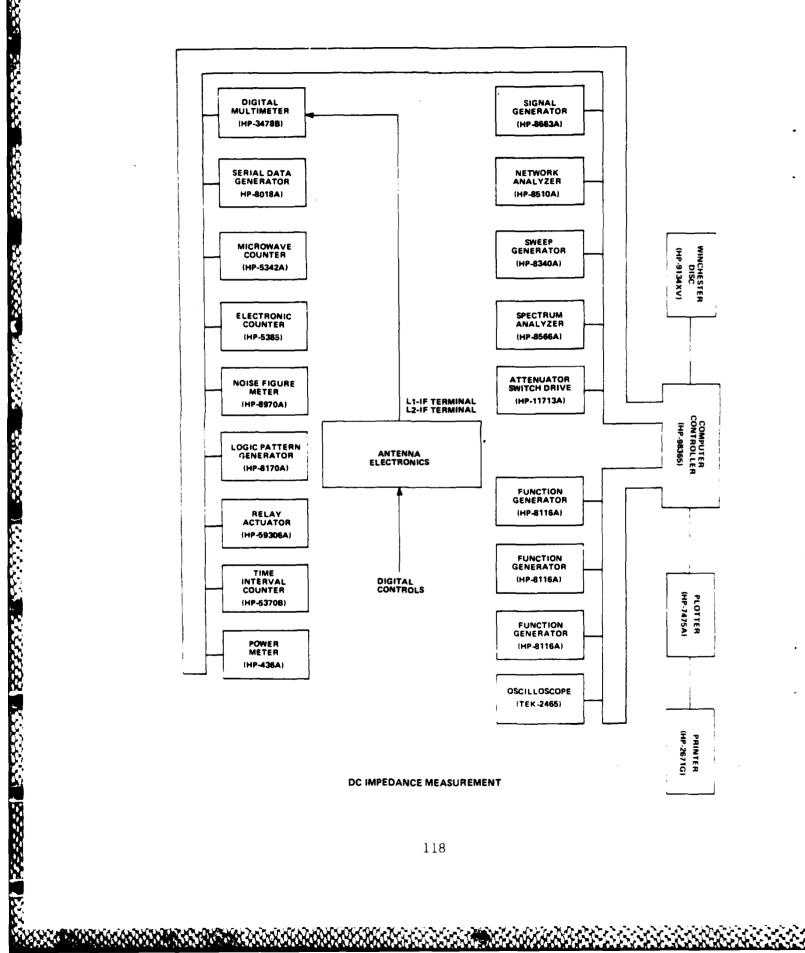
CONTE	actor:	ROCK	WEIT COITINS			
Board	Tested:	Antenr	na Electronic	:s		
Test	Objective:	To ensure	that the Ll	and L2	IF interfaces	of the
AE are	e AC coupled (DC Im	pedance)				
						_ <del></del>
	Inputs					
	Input Name		Input Lev	<u>el</u>	Equi	oment Used
1	Digital Controls		TBD		<u></u>	TBD
2				<del></del>		
3						
4	<u> </u>		· <del></del>		<del></del>	
5					_	
6						
7.						
8.						
9.						
- .0.						
-	· · · · · · · · · · · · · · · · · · ·	<del></del>	· · · · · · · · · · · · · · · · · · ·			

gard territoral extension territoral estension secured Decessor extension territoral territoral

11.

12.

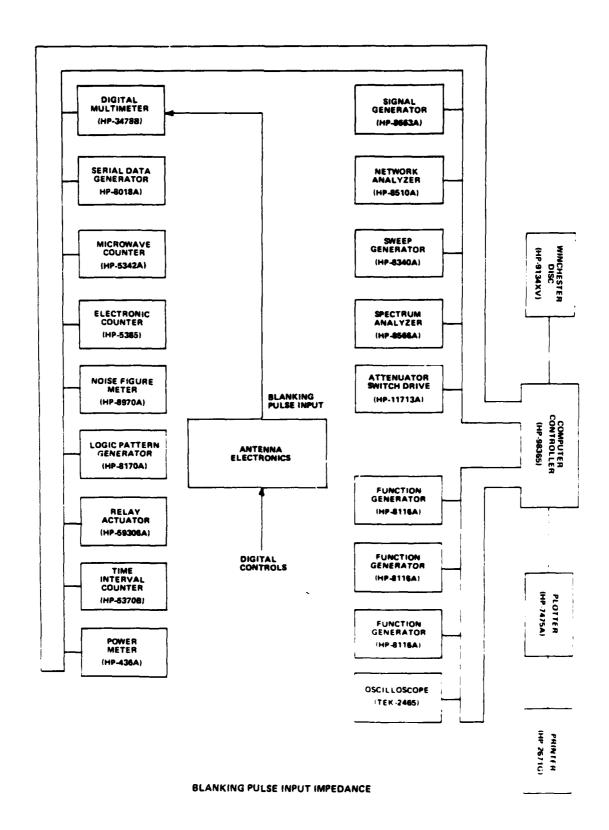
	Output Name	Output Level	Equipment Used
L <b>.</b>	L2 IF	>100kΩ	Digital Multi (HP-3478F
2.	Ll IF	>100kΩ	Digital Multi (HP-3478F
3.			
١.		<del></del>	
5.			
		urn on test equipment. Set m	
term	ninal. A DC impedance	greater than 100kΩ will indi	cate that the inter-
face	is AC coupled only.	Repeat for Ll.	<del></del>
<del></del>			
<del></del>			
		d input levels and output of	Digital Multimeter
to	printer.		<del></del>
Egui	pment List:		
l.	Computer (HP-9836S)	4.	7.
2.	Printer (HP-2671G)	5.	8.
3.	Digital Multimeter	6.	9.



327.55.55.

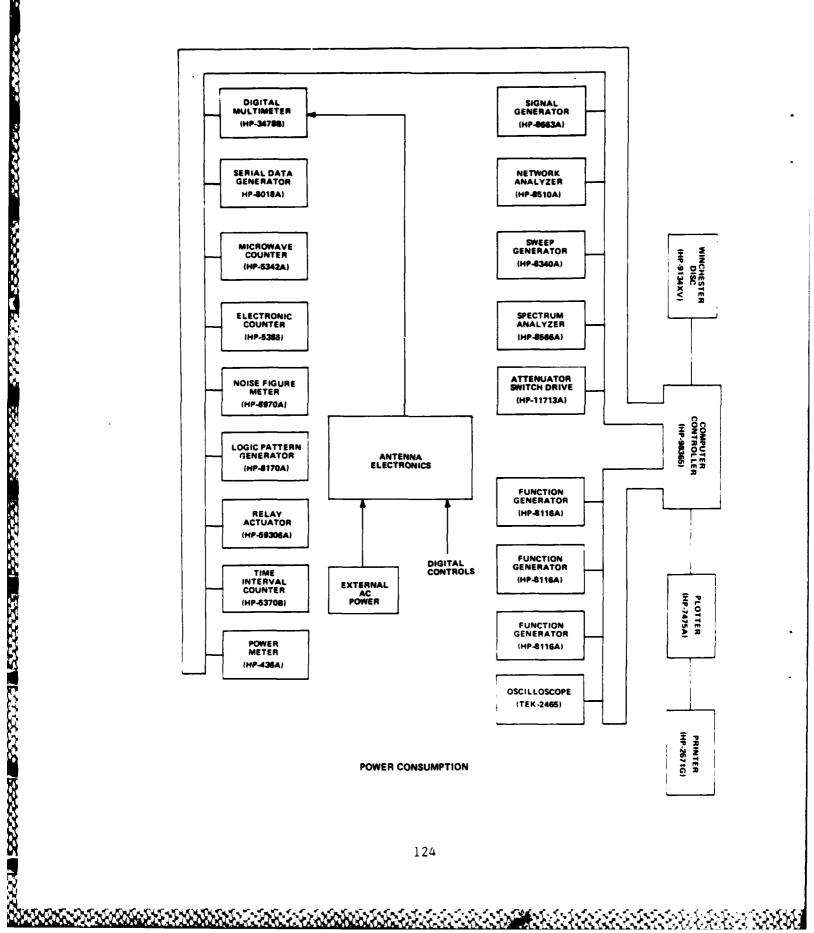
Cor	ntractor:	Rockwell-Collins	
Boa	ard Tested: A	ntenna Electronics	
Tes	t Objective: Verify	that input impedance is	not less than 2k ohms
re	sistive. (Blanking Pulse In	put Impedance)	
	Inputs		
	Input Name	Input Level	Equipment Used
1.	Blanking Pulse Input Z	2kΩ minimum	<u>Digital Multi. (HP-3478B</u>
2.	Digital Controls	TBD	TBD
3.			
4.			· .
5.			
6.			
7.			
8.			
9.			
10.			
11.	<del></del>		
12.			

	Output Name	Output Level	Equipment Used	
,				
1.				_
2.		<del></del>		
3.		-	<del></del>	_
4.		*	<del></del>	
5.				
Test	Procedure: Tu	urn on test equipment. S	et measurement equipment	
			cross the Blanking Pulse	
	-			
Inpu	tt remunar. Measure r	esistance.		
_			····	
Data	Reduction: Send	input levels and output	of Digital Multimeter	
	printer.			
	51 111001 •	· · · · · · · · · · · · · · · · · · ·		
Equi	pment List:			
1.	Computer (HP-9836S)	4.	7	
2.	Printer (HP-2671G)	5	8	
3.	Digital Multi. (HP-3478B)	6.	9.	



Contract	<u>or</u> :	Rockwell-Collins	
Board Te	sted:	Antenna Electronics	
Test Obj	ective: To	verify that the AE does not ex	xceed its specified
power con	sumption. (Power (	Consumption)	
	Inputs		
	Input Name	Input Level	Equipment Use
	Inpat Name	input bever	industrial and
l. Mai	n Power	115VAC/400Hz/1-Phase	_External_Source_
<del></del>	ital Controls	TBD	TBD
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.		<del></del>	<del></del>
12.			***************************************
		122	

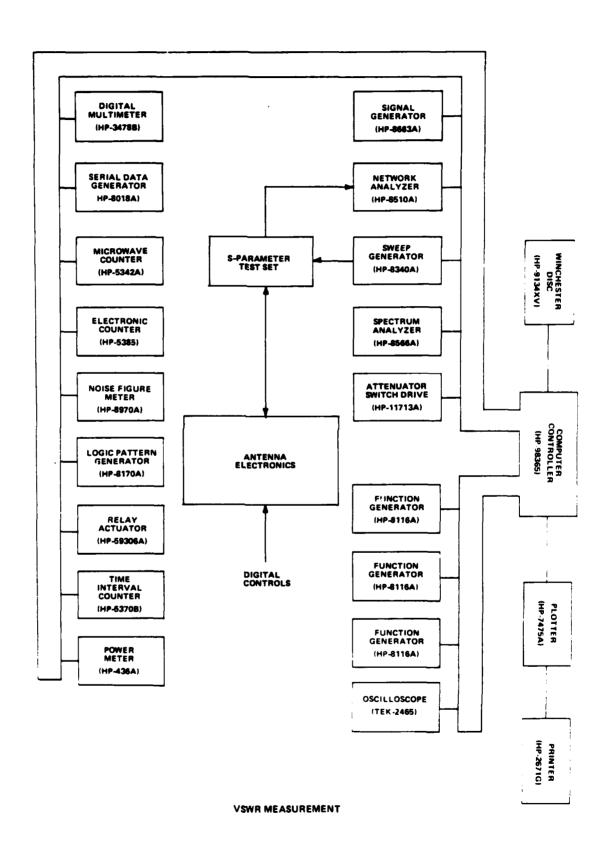
	Output Name	Output Level	Equipment Used
1.	Main power line current & line voltage	22 watts (max.)	Digital Multi. (HP-3478B)
3.			
4.			
5.			
Tes	t Procedure: Turn	on test equipment. Set	measurement equipment
to p	proper ranges. Measure cu	rrent in main power line	e and line voltage with
Digi	ital Multimeter.		
	· · · · · · · · · · · · · · · · · · ·		
Data	a Reduction: Send ou	tput of Digital Multimet	er to printer. Power
cal	culation (P=VI).		
Equ:	ipment List:		
1.	Computer (HP-9836S) 4	. Ext. AC Source	7.
2.	Printer (HP-2671G) 5		8.
2	Digital Multi PD-3/7		9



<u>com</u>	ractor.	ROCKWEIT-COILINS			
Boar	d Tested:	Antenna Electronics			
Test Objective: To verify that the VSWR at all of the AE inputs					
is w	is within specification. (Input VSWR)				
	_				
	Inputs				
	Input Name	Input Level	Equipment Used		
1.	S-Par Test Set	<u>L1 (1565.42 to 1585.42)MHz</u> @ <b>-45dB</b> m	Sweep Gen. (HP-8340A)		
2.	S-Par Test Set	12 (1217.6 to 1237.6)MHz	Sweep Gen. (HP-8340A)		
3.	S-Par Test Set	@ <b>-45dBm</b> <u>fc = 350MHz @ -45dBm</u>	Sweep Gen. (HP-8340A)		
4.	Digital Controls	TBD	TBD		
5.					
6.					
7.					
8.					
9.					
10.					
11					

12.

	Output Name		Output Level		Equipment Used	
1.	CRPA Ref. Input		VSWR= 1.5:1 (max.) (I1,I2)		Network Anal. (HP-85	10A
2.	CRPA Aux. Inputs (6)		VSWR= 1.5:1 (max.) (I1,I2)		S-Par Test Set (HP-85)	5A)
3.	BMFRPA Input		VSWR= 1.5:1 (max.) (L1,L2)			
4.	LO Input (Ll IF)		<u>VSWR = 2.0:1 (max.)</u>			
5.						
Test	t Procedure: Tu	ırn on	test equipment. Set m	easur	ement equipment	
to p	proper ranges. The ref	erenc	e channel input of the	AE wi	ll be connected	
to t	the test port of the S-	Param	eter Test Set. Sll (Ir	put R	eflection	
Coe	fficient) will be meas	ured.	Repeat for all other	inputs	3 <b>.</b>	
		· · · · · · · · · · · · · · · · · · ·				
		•		· · ·		
Data	a Reduction: Da	ıta wi	ll be plotted on a Smit	h cha	rt using the	
			o printer.	_		
pro	cter. Inputs will be s	ent t	o princer.	<del> </del>		
			<u> </u>			
_						
Equ:	ipment List:					
1.	Computer (HP-9836S)	4.	S-Par Test Set (HP-8515A)	7.		
2.	Printer (HP-2671G)	5.	Sweep Cen. (HP-8340A)	8.		
3.	Network Anal. (HP-8510A)	6.	Plotter (HP-7475A)	9.		



Board Tested:	Antenna Electronics
Test Objective:	To verify that the VSWR at all of the AE outputs is
within specification.	(Output VSWR) .

### Inputs

gossi issassa issassa, issassa, issassa, issassa, issassa issassa, issassa, issassa, issassa, issassa issas S

	Input Name	Input Level	Equipment Used
1.	S-Par Test Set	<u> 11 IF(164MHz to 184MHz)</u> @-45dBm	Sweep Gen. (HP-8340A)
2.	S-Par Test Set	12IF(164MHz to 184MHz) @-450Bm	Sweep Gen. (HP-8340A)
3.	Digital Controls	TBD	TBD
4.			
5.			
6.			
7.			
8.			
9.		-	
10.			
11.			
12.			

	Output Name		Output Level		Equipment Used
1.	Ll IF output		VSWR = 1.5:1 (max.)	-	Network Anal. (HP-8510)
2.	L2 IF output		VSWR = 1.5:1 (max.)	-	S-Par Test Set (HP-8515
3.	MCR output		VSWR = 2.0:1 (max.)	-	
4.				-	
5.				_	
Tes	t Procedure: To	ırn on	test equipment. Set	measur	ement equipment
	proper ranges. The Ll				
por	t of the S-Parameter te	est se	t. S22 (Output Reflec	t Coef	ficient) will
be	recorded. Repeat for a	ıll ot	her outputs.		
Dat	a Reduction: Da	ıta wi	11 be plotted on a Smi	th Cha	ort using the
	otter. Inputs will be				
			<u></u>		
Fau	ipment List:				
<u>rqu</u>	Ipment Bist.				
1.	Computer (HP-9836S)	4.	S-Par Test Set (HP-8515A	7.	
2.	Printer (HP-2671G)	5.	Network Anal. (HP-8510A)	8.	
3.	Sweep Gen. (HP-834CA)	6.	Plotter (HP-7475A)	9.	

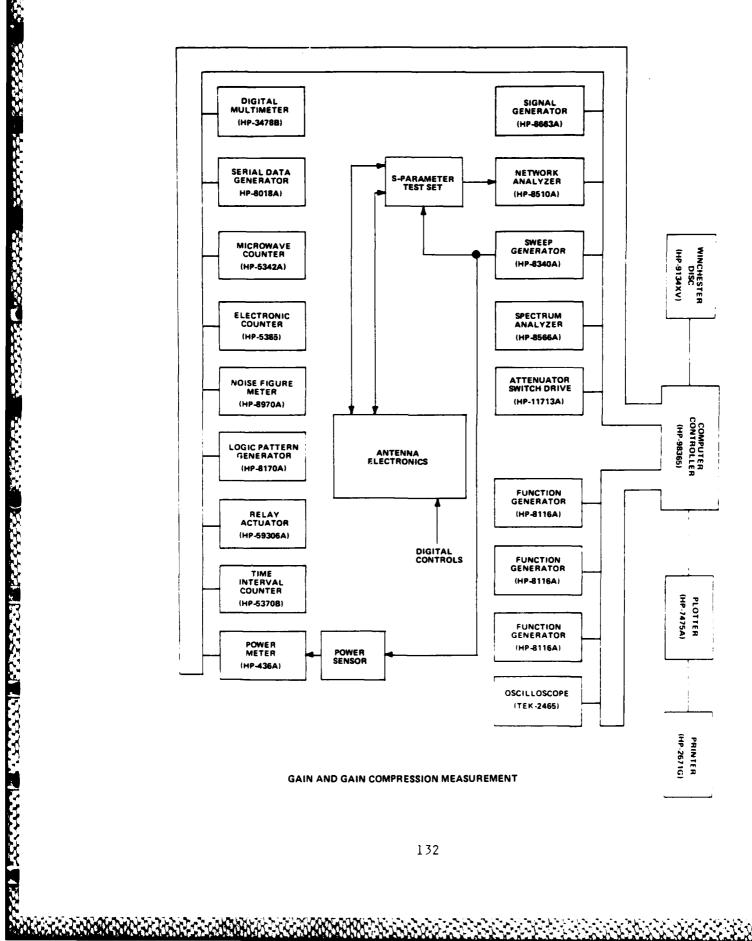
Contractor:	Rockwell-Collins
Board Tested:	Antenna Electronics
Test Objective:	To verify that the gain of the AE from the CRPA
reference channel input	to either IF output as well as the MCR output, and
the gain from the BMFRD	A input to either IF output is as specified (Gain)

### Inputs

Input Name	Input Level	Equipment Used
	*1 (1505 AO A. 1505 AO(A)	G (ITD 02401)
CRPA Ref. Channel Input		Sweep Gen. (HP-8340A)
CRPA Ref. Input	12(1217.6 to 1237.6MHz)	Sweep Gen. (HP-8340A)
BMFRPA Input	Ll(1565,42 to 1585,42MHz)	Sweep Gen. (HP-8340A)
BMFRPA Input	12(1217.6 to 1237.6MHz)	Sweep Gen. (HP-8340A)
*Digital Controls	@ <b>-</b> 45dBm TBD	TBD
		·
	CRPA Ref. Channel Input CRPA Ref. Input BMFRPA Input BMFRPA Input	CRPA Ref. Channel Input  @ -45dBm CRPA Ref. Input    L1(1565.42 to 1585.42MHz)     @ -45dBm     L2(1217.6 to 1237.6MHz)     @ -45dBm     L1(1565.42 to 1585.42MHz)     @ -45dBm     BMFRPA Input   L2(1217.6 to 1237.6MHz)     @ -45dBm     BMFRPA Input   L2(1217.6 to 1237.6MHz)     @ -45dBm

<sup>\* (</sup>May need LO Source (Signal Generator HP-8663A)) (350MHz)

	Output Name	Output Level	Equipment Used			
l: 2.	CRPA Ref. to MCR Cutput for L1 & L2 CRPA Ref. to L1 IF Cutput	17dB +5dB 38 +5dB	Network Anal. (HP-8510A) S-Par Test Set (HP-8515A)			
3.	for L1 & L2  BMFRPA to L1-IF Output	± 38 ±5dB				
1. 5.						
power meas	er to the AE will be -40 sured at Ll between the outputs; and the bottom	n on test equipment. Set me will be connected to the Net OdBm ±5dB. The passband resumment of the control signals applied.	work Analyzer. Input sponse will be set and the IF and			
Data Reduction: Send output of Network Analyzer to plotter and send inputs to printer. Read GAIN from passband response recorded on						
	ipment List:					
l.	Computer (HP-9836S)	4. <u>Plotter (HP-7475A)</u>	7. <u>S-Par Test Set (HP-8515A</u> )			
2.	Printer (HP-2671G)	5. Power Sensor (HP-8481A)	8. Network Anal. (HP-851CA)			
3.	Sweep Gen. (HP-8340A)	6. Power Meter (HP-436A)	9			



5000000, 55255553 . HALLES

Contractor:	ROCKWell-Collins		_		
Board Tested:	Ante	enna Electr	ronics	_	•
Test Objective:	To verif	y that the	AE exhibi	its less than	specified
amount of Gain Compress	ion at th	ne IF outpu	t with an	input signal	of -33dBm.
(Gain Compression)		<del></del>			

# Inputs

	Input Name	Input Level	Equipment Used
1.	CRPA Ref, Channel Input	L1 (1565.42 to 1585.42MHz)	Sweep Gen. (HP-8340A)
2.	CRPA Ref. Input	@ -33dBm +.1 12(1217.6 to 1237.6MHz)	Sweep Gen. (HP-8340A)
3.	BMFRPA Input	@ -33dBm <u>+</u> .1 L1(1565.42 to 1585.42MHz)	Sweep Gen. (HP-8340A)
4.	BMFRPA Input	@ -33dBm <u>+</u> .1 <u>L2(1217.6 to 1237.6MHz)</u>	Sweep Gen. (HP-8340A)
5.	*Digital Controls	@ -33dBm <u>+</u> .1 TBD	TBD
6.			
7.			
8.			
9.			
10.			
11.			
12.			

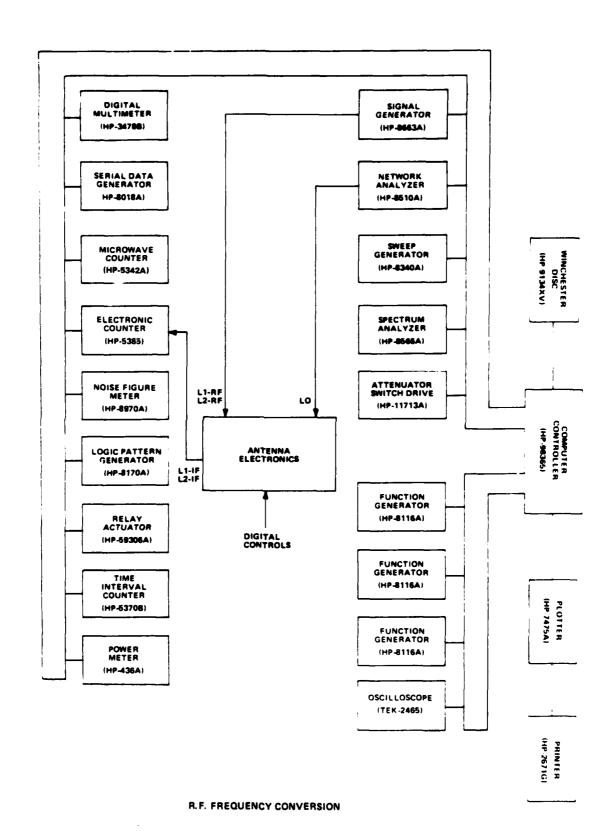
<sup>\* (</sup>May need LO source (Signal Generator HP-8663A)) (350MHz)

	Output Name		Output Level Equipment		
1.	Ll IF Output		<u>+</u> 1dB	_	Network Anal. (HP-8510A)
2.	L2 IF Output		<u>+</u> ldB	_	S-Par Test Set (HP-8515A)
3.	MCR Output		<u>+</u> ldB	_	
4.				_	•
5.				_	
				_	
Test	t Procedure:Tu	rn or	n test equipment. Set	measu	rement equipment
to	proper ranges. An inpu	t pov	wer level at the CRPA	refere	nce channel
inp	ut will be set at -33dB	n. 7	The AE will be connect	ed to	the Network
	lyzer. The passband re				
	erence channel input an				
	ponse will be measured	_			
	put. Repeat for L2.				
Data	a Reduction: Se	nd oi	utput of Network Analy	zer to	plotter and
	d inputs to printer. F				
plo	tter. Compare results	of t	his test with results	of the	e GAIN test to
	ermine GAIN compression				
<u>Equ</u> :	ipment List:				
1.	Computer (HP-9836S)	4.	Plotter (HP-7475A)	7.	Network Anal. (HP-8510A)
2.	Printer (HP-2671G)	5.	Power Sensor (HP-8481A)	8.	S-Par Test Set (HP-8515A)
3.	Sweep Gen. (HP-8340A)	6.	Power Meter (HP-436A)	9.	

Cont	ractor:	Rockwell-Collins	
Boar	d Tested:	Antenna Electronics	
Test	Objective:	To demonstrate that Ll RF and L2 RF ar	e down con-
verte	ed to the common IF	and output to their respective ports.	(RF Frequency
Conve	ersion)		
	Inputs		
	Input Name	Input Level	Equipment Used
1.	CRPA Ref. Channel	1575.42 <u>+1</u> 0MHz Si	gnal Gen. (HP-8663A

1.	CRPA REL. CHARRIET		Signal Gen. (HP-8003A)
2.	CRPA Ref. Channel	1227.6 <u>+10MHz</u>	Signal Gen. (HP-8663A)
3.	LO Signal (Ll IF Port)	350MHz	Sweep Gen. (HP-8340A)
4.	Digital Controls	TBD	TBD
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

	Output Name		Outr	out Level		Equipment Use	<u>d</u>
1.	Ll IF Output	_	174	MHz ±.5MHz	Ele	ectronic Ctr (HP-53	185)
2.	L2 IF Output	_	174	MHz ±.5MHz			
3.		_					
4.							
5.		_					
		-					
Test	Procedure: T	urn on	test e	quipment. Set	measureme	nt equipment	
to p	proper ranges. A Ll R	FCW s	ignal 😘	ill be injecte	ed into the	: AE and the	
Ll 1	IF output will be dete	rmined	. The	test will be r	repeated fo	or L2 RF.	
Appl	ly proper digital cont	rol si	gnals.				
		<del></del>		· · · · · · · · · · · · · · · · · · ·			
			•	· · · · · · · · · · · · · · · · · · ·			
D = 4 =	Dadwatian Sond	innut	lovole	and output of	Flactmoni	c Countan to	
		Tilpuc	164612	and output of	Diecti Olli	c courrer co	
<u>pri</u>	nter.	<u>.</u>	·			<del> </del>	
<del></del>							
Equ1	pment List:						
1.	Computer (HP-9836S)	4.	Signal	Gen. (HP-8663A)	7		
2.	Printer (HP-26713)	5.	Sweep G	en. (HP-8340A)	8		
3.	Electronic Otr (HP-5385)	6.			9.		



Contractor:		Rockwell-Collins	
Board Tested:		Antenna Electronics	
Test	Objective:	To verify the desired filter sel	ectivity for the
Ll a	nd L2 IF outputs (c	hannel selectivity filtering)	· · · · · · · · · · · · · · · · · · ·
		······	
			,
	Inputs		
	Input Name	Input Level	Equipment Used
1.	CRPA Ref Input	<u>il(1450.42 to 1700.42MHz)</u> @ -45dBm	Sweep Gen. (HP-8340A)
2.	CRPA Ref Input	12(1102.6 to 1352.6Mtz)	Microwave Ctr (HP-5342A)
3.		@ <b>-</b> 45dBm	Power Sensor (HP-8481A)
4.			Power Meter (HP-436A)

TBD

TBD

\*Digital Controls

5.

6.

7.

8.

9.

10.

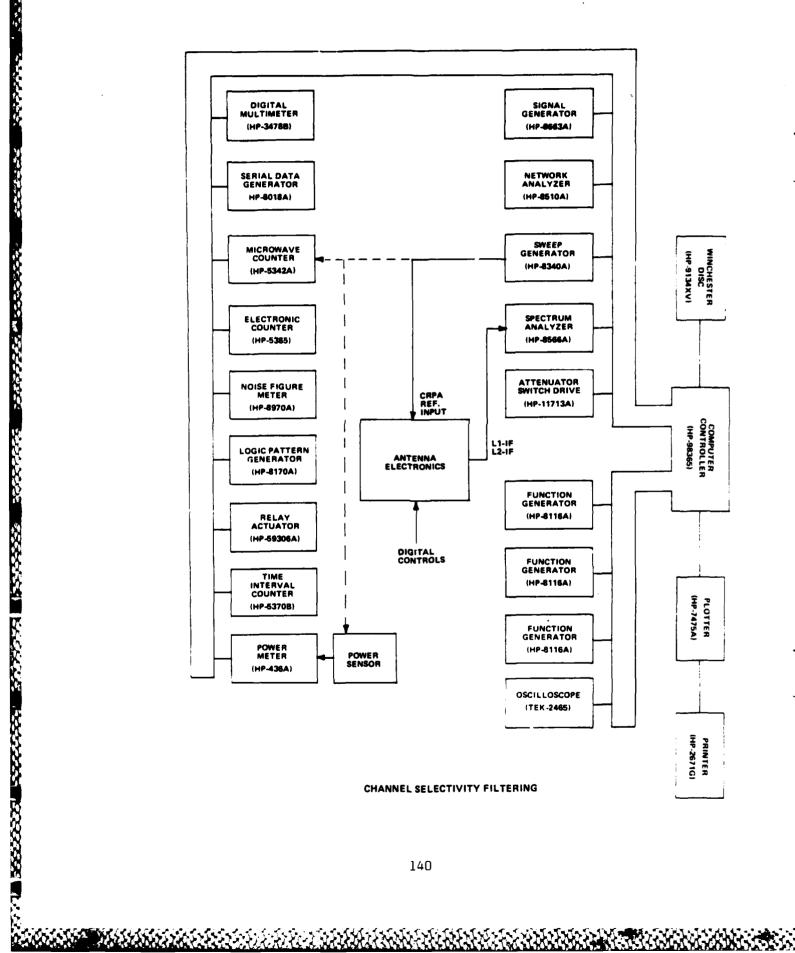
11.

12.

A CONTRACT OF THE PROPERTY OF

<sup>\* (</sup>May need LO Source (Signal Generator HP-8663A)) (350MHz)

<u>outpues</u>					
Output Name	Output Level	Equipment Used			
1. Ll IF Output	3dB(Bw) - 30 + 3MHz	Spectrum Anal. (HP-8566A)			
2. Ll IF Output	40dB(Bw) - 250MHz(max)	Spectrum Anal. (HP-8566A)			
3. L2 IF Output	3dB(Bw) - 30 + 3MHz				
4. L2 IF Output	40dB(BW) - 250MHz(max				
5.					
Test Procedure: Turn	on test equipment. Set mea	surement equipment			
to proper ranges. The AE wi	11 be connected to the Spec	ctrum Analyzer.			
Input power to the AE will b	e -40dBm + 5dB. The passba	and response at Ll			
between the CRPA input and t	he IF output will be measur	red and recorded.			
Repeat for L2. Apply proper	digital control signals.				
Data Reduction: Send	output of Spectrum Analyze	to plotter and			
send inputs to printer. Rea	ad 3 and 40dB bandwidths fr	om the passband			
response recorded on the plo	otter.				
· · · · · · · · · · · · · · · · · · ·					
Equipment List:					
1. <u>Computer (HP-9836S)</u> 4	Microwave Ctr (HP-5342A)	7. Spectrum Anal. (HP-8566A)			
2. Printer (HP-2671G) 5	Power Sensor (HP-8481A)	8. Plotter (HP-7475A)			



Contract Contractor

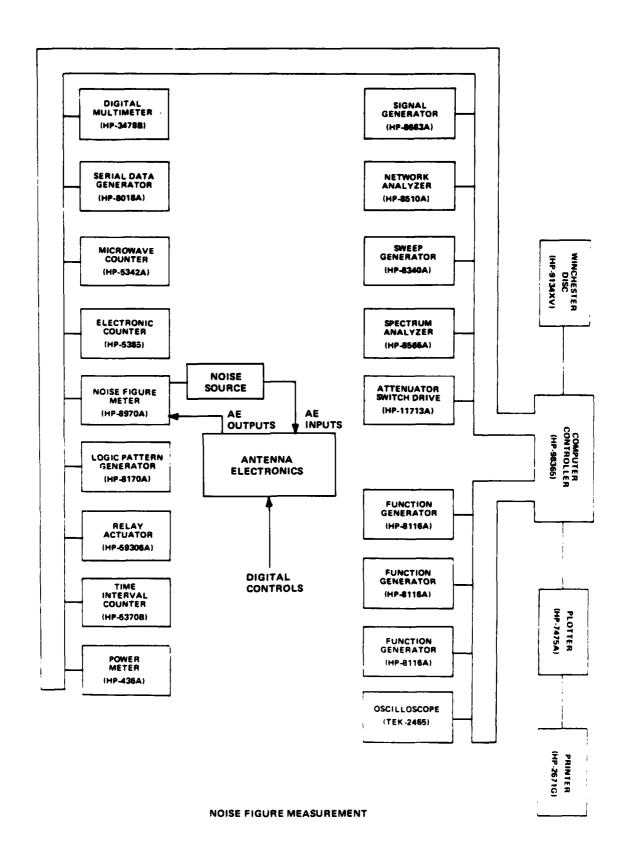
Contractor:	Rockwell-Collins
Board Tested:	Antenna Electronics
Test Objective:	To verify that the noise figures of the AE refer-
ence, auxiliary and	BMFRPA signal paths are within specified values.
(Noise Figures)	

### Inputs

og som konnend bespeede bespeede notices ( notices essential bespeede source ( observe essential) So

	Input Name	Input Level	Equipment Used
1.	CRPA Ref Input	TBD	Noise Source (HP-346B)
2.	CRPA Aux Inputs (6)	TBD	Noise Source (HP-346B)
3.	BMFRPA Input	TBD	Noise Source (HP-346B)
4.	Digital Controls	TBD	TBD
5.			**************************************
6.			
7.			
8.			
9.			
10.		•	
11.			
12.			

	Output Name	Outpu	t Level	Equipment Used
1.	Ll IF Output	Ref: In	put (3dB max.)	Noise Figure Meter (HP-8970A)
2.	Ll IF Output	Aux Inpu	ts (7.5dB max.)	Noise Figure Meter (HP-8970A)
3.	Ll IF Output	BMFRPA I	nput(3.5dB max.)	Noise Figure Meter (HP-8970A)
4.	L2 IF Output	Ref. In	put (3dB max.)	Noise Figure Meter (HP-8970A)
5.	L2 IF Output	Aux. Inp	uts (7.5dB max.)	Noise Figure Meter (HP-8970A)
6.	L2 IF Output	BMFRPA I	nput (3.5dB max)	Noise Figure Meter (HP-8970A)
Test	Procedure: Tu	m on test equ	ipment. Set meas	urement equipment
to p	roper ranges. Apply p	roper digital	control signals.	Apply noise
sour	ce to AE inputs. Meas	ure noise figu	re in each signal	path with oise
<u>igu</u>	re ter.			
Data	Reduction: Send	input levels	and output of Noi	se Figure Meter
to	printer.			
Equi	pment List:			-
1.	Computer (HP-9836S)	4. <u>N.F. Me</u>	ter (HP-8970A) 7	
2.	Printer (HP-2671G)	5.	8	
3.	Noise Source (HP-346B)	6	9.	



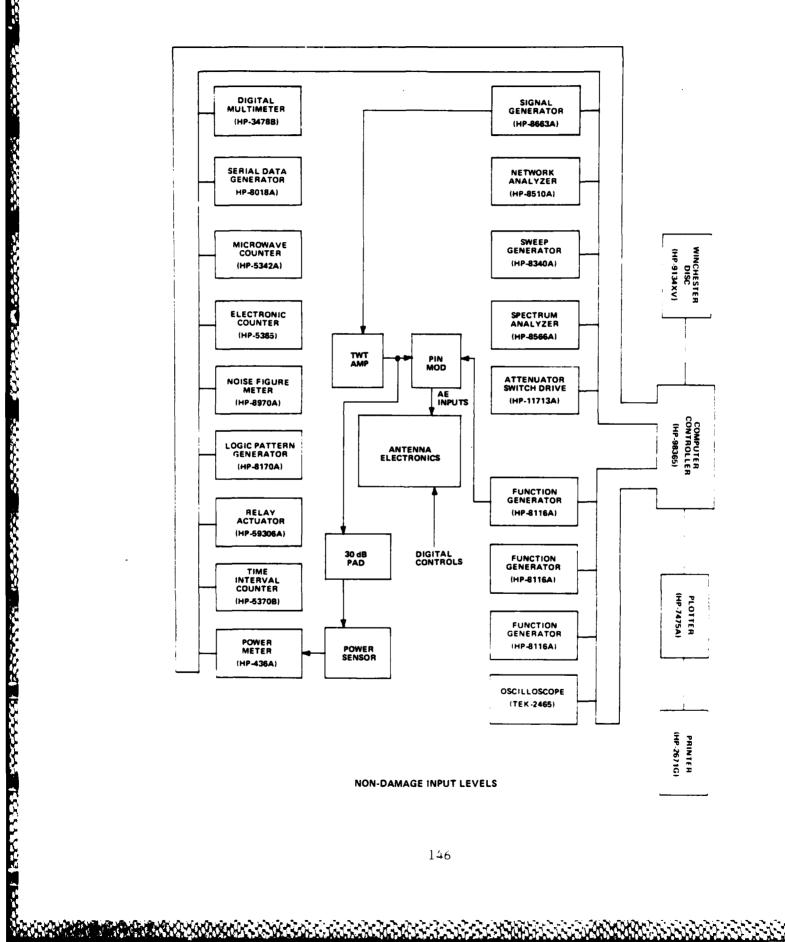
<u>Contractor</u> :	Rockwell-Collins
Board Tested:	Antenna Electronics
Test Objective:	To verify that the AE will not incur permanent
damage or performance	degradation after being subjected to specified input
signal levels. (Non-d	amage input levels)

# Inputs

and increase individual individual exercise sensitifical decesses services services forests individual decess.

	Input Name	Input Level	Equipment Used
1.	CRPA Ref Input	<u>11(1575.42MHz)@ OdBm (OW)</u>	Signal Gen. (HP-8663A)
2.	CRPA Aux Inputs (6)	11(1575.42MHz)@ OdBm (CW)	Signal Gen. (HP-8663A)
3.	BMFRPA Input	11(1575.42MHz)@ 0dBm (CW)	Signal Gen. (HP-8663A)
4.	CRPA Ref Input	+30dBm Populse, 4,W, 0.1%DC	Function Gen. (HP-8116A)
5.	CRPA Aux Inputs (6)	+30dBm Pp pulse, 4, W, 0.1%DC	Function Gen. (HP-8116A)
6.	BMFRPA Input	+30dBm Pp pulse, 4,W, 0.1%DC	Function Gen. (HP-8116A)
7.	Digital Controls	TBD	TBD
8.			Power Sensor (HP-8481H)
9.			Power Meter (HP-436A)
10.			Pin Mod. (HP-8731A)
11.			30dB PAD
12.			TWT Amplifier

	Output Name		Output Level		Equipment Used
1.		_		_	·
2.		-			
3.				_	
4.				-	
5.				- -	
_					
			test equipment. Set i		
to r	proper ranges. A OdBm	CW si	gnal will be injected	for fi	ve
minu	ites alternatively into	<u>each</u>	of the CRPA inputs as	well	as the BMFRPA
inpu	nt. This will be repea	ited ι	nsing a +30dBm peak pow	er pul	se signal with
4µs	pulse width and 0.1% d	luty c	cycle for five minutes.	The	tests performed
for	GAIN and Noise Figure	will	be repeated. Repeat r	rocedu	ere for L2
free	quency.				
-	•		-		
Data	a Reduction: Send	inpu	t levels and output of	Power	Meter to printer.
Co	mpare results with dat	a obt	ained in test performed	for	GAIN & NOISE
FI	GURE to verify no dama	ge to	AE.		
Equ	ipment List:				
1.	Computer (HP-9836S)	4.	Function Gen. (HP-8116A)	7.	Amplifier
2.	Printer (HP-2671G)	5.	Power Sensor (HP-8481A)	8.	PIN Mod. (HP-8731B)
3.	Signal Can (HP_8663A)	6.	or H Pawer Meter (HP_4361)	9.	30db Pad



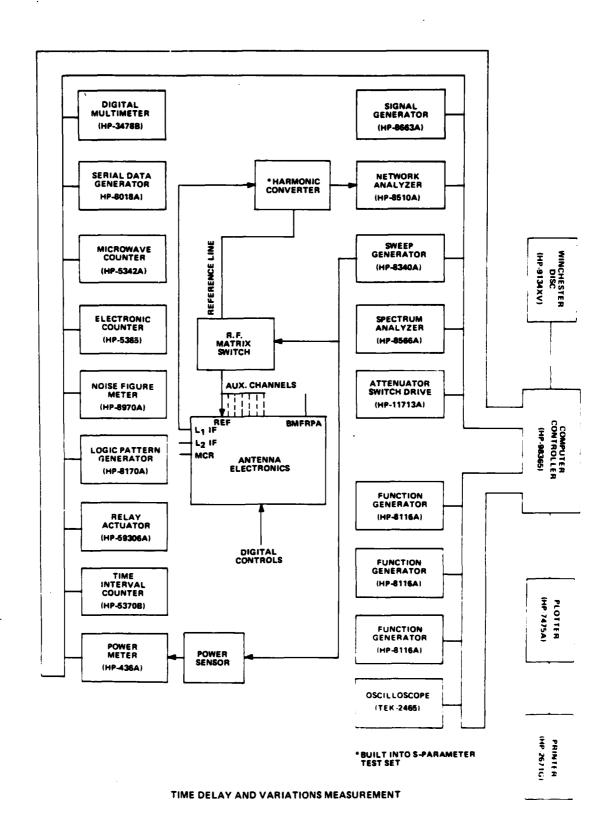
services, especially

Contractor: Rockwell-Collins						
Board Tested: Antenna Electronics						
Test Objective: To	verify for a given frequency.	the time delay				
from any CRPA auxiliary cha	annel input to either the IF or	MCR output does				
not vary more than a specif	fied amount from the delay, fro	m the reference				
channel input to the same of	output. (Time Delay) & (Time I	Delay Variations).				
Inputs						
Input Name	Input Level	Equipment Used				
l. CRPA Ref Input	Ll(1565,42 to 1585,42MHz)	Sweep Gen. (HP-8340A)				
2. CRPA Ref Input	@ -45dBm 12(1217.6 to 1237.6MHz)	Sweep Cen. (HP-8340A)				
3. CRPA Aux Inputs (6)	@ -45dBm L1(1565.42 to 1585.42MHZ)	_				
	@ <b>-4</b> 5dBm	Sweep Gen. (HP-8340A)				
4. <u>CRPA Aux Inputs (6)</u>	<u>12(1217.6 to 1237.6MHz)</u> @ <b>-</b> 45dBm	Sweep Gen. (HP-8340A)				
5. BMFRPA Input	<u>Il(1565.42 to 1585.42MHz)</u> @ <b>-</b> 45dBm	Sweep Gen. (HP-8340A)				
6. BMFRPA Input	12(1217.6 to 1237.6MHz) @ -45dBm	Sweep Gen. (HP-8340A)				
7. *Digital Controls	TBD	TBD				
8.						
9.						
10.						
11.						
12.						
12.						

<sup>\*</sup> May need LO signal

	Output Name		Output Level		Equipment Used
l.	Aux 1-6 to IF out 11 or 12	2	0.8 ± 0.4ns		Network Anal. (HP-8510A)
2.	Aux 1-6 to MCR out I.l or I	2	0.8 ± 0.4ns	_	S-Par Test Set (HP-8515A)
3.	Ll-L2 variation			_	
4.	MCR Output	-	2 ns max.	_	
5.	IF output		2 ns max.		
Гes	t Procedure: Ti	ırn or	n test equipment. Set	measu	rement equipment
to	proper ranges. Connect	the	sweep generator to th	e refe	rence channel
	ut of the AE and the L1				•
	verter: The reference				
		-			
	the sweep generator by				
eacl	uld show a flat phase s h of the auxiliary char l be repeated for L2 as	nels	and the phase slope w	ill be	observed. This
	l be repeated for 12 as				_
		_	· <del>·</del>		
	a Reduction: Se				
	end inputs to printer.			ited ir	om phase slope
re	ecording by the 8510 di	splay	•		
Equ	ipment List:				
1.	Computer (HP-9836S)	4.	Plotter (HP-7475A)	7.	RF Matrix Swtich
2.	Printer (HP-2671G)	5.	Network Anal. (HP-8510A)	8.	
	Super Cen (HP-8340A)		S_Par Test Set (HP-8515A	) 9.	

<sup>\*</sup>Harmonic Converter is built into S-Parameter Test Set.



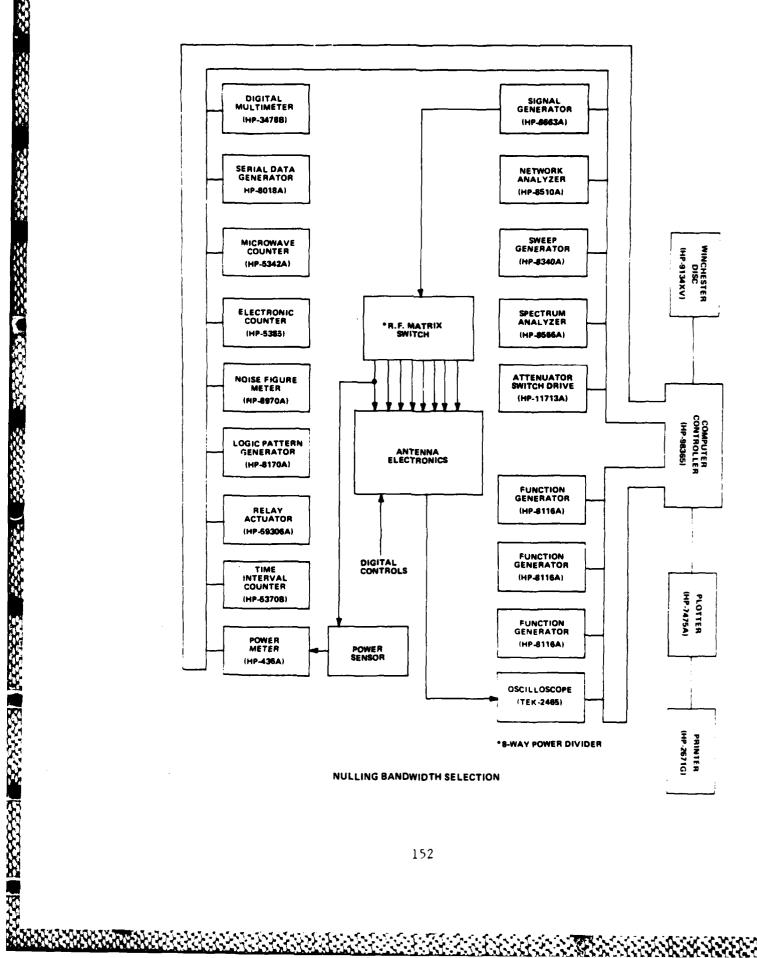
Contractor:	Rockwell-Collins	
Board Tested:	Antenna Electronics	
Test Objective:	To verify the ability of the AE to select a reduced	
performance monitor ban	dwidth within a specified time after being commanded	
to do so (Nulling bandw	ridth selection).	

### Inputs

	<u>Input_Name</u>	Input Level	Equipment Used
1.	CRPA Ref. Input	1580MHz @ -45dBm	Signal Gen. (HP-8663A)
2.	CRPA Aux. Inputs (6)	1580MHz @ -45dBm	RF Matrix Switch
3.			Power Sensor (HP-8481A)
4.			Power Meter (HP-436B)
5.	*Digital Controls	TBD	TBD
6.			
7.			
8.			
9.		·	
10.			
11.			
12.			

<sup>\*</sup> May need LO signal

	Output Name		Output Level		Equipment Used
1.	C/A to P	-	20 ms (max)		Oscilloscope (TEK-2465
2.	P to C/A	-	20 ms (max)		
3.		<b>-</b> .			
4.		_		_	
5.		_		_	
ፐልፍ	t Procedure: T	urn or	n test equipment. Set	moseu	remont equipment
	proper ranges. A -45di				
	nal should be outside oscilloscope to observe				<u>-</u>
line	e), the time required	to cha	ange bandwidth will be	record	ded
	a Reduction: Secuts to printer.	end ou	utput of Oscilloscope t	o plot	ter and send
Equ	ipment List:	·		· 	
1.	Computer (HP-9836S)	4.	Plotter (HP-7475A)	7.	Power Senson (HP-8481A)
2.	Printer (HP-2671G)	5.	RF Switch Matrix	8.	Power Meter (HP-436A)
3.	Signal Con (HP-8665A)	6.	Oscilloscope (TEK-2465)	9.	· <del>····</del>



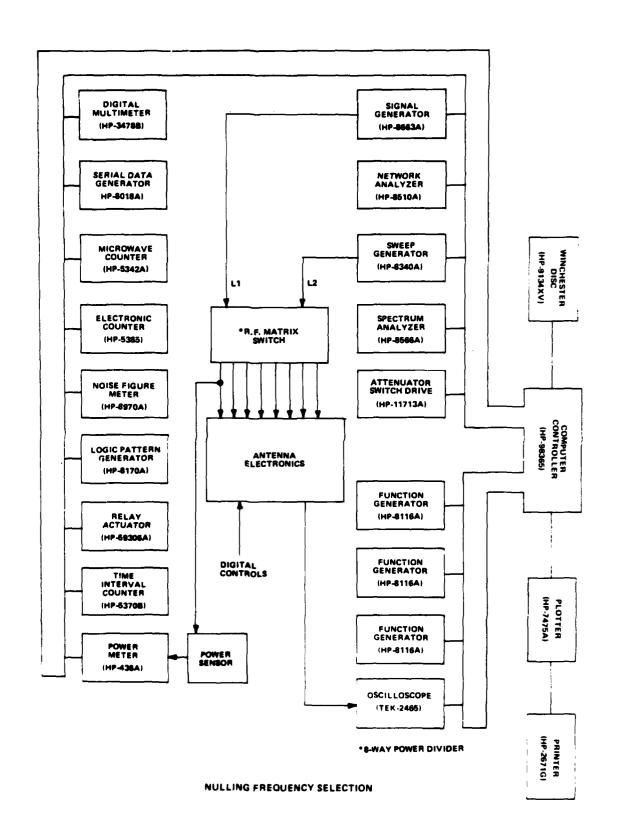
Contractor:	Rockwell-Collins				
Board Tested:	Antenna Electronics				
Test Objective: To verify that the AE will switch nulling frequency					
bands within a specifie	ed time upon command. (Nulling	frequency selection)			
Tunuka					
Inputs					
Input Name	Input Level	Equipment Used			
1. <u>CRPA Ref. Input</u>	L1/L2 @ -45dBm	Signal Gen. (HP-8663)			
2. <u>CRPA Aux. Inputs</u>	s(s) <u>L1/L2@-45dBm</u>	Sweep Gen. (HP-8340A)			
3.		RF Matrix Switch			
4.		Power Sensor (HP-8481A)			
5.		Power Meter (HP-436B)			
6. *Ligital Control	s TBD	TBD			
7.					
8.					
9.					
10.					
11.					
12.					

\*May need LO signal

Signal Gen. (HP-8663A)

Samil Ammeral ecclosed which | present measure masses measured

	Output Name		Output Level		Equipment Used
1.	Ll (1575MHz)	_	10ms (max.)		Oscilloscope (TEK-2465
2.	L2 (1227MHz)	-	10ms (max.)	_	
3.		-		_	
4.		_		_	
5.		_		_	
to p	Procedure:	5dBm C	W jammers will be set	up; or	ne at Ll and one
	2, and both of these	_	<del></del> -		
	lloscope will be used			-	
	frequency select line led and the nulling tire			select	will be com-
	a Reduction: Ser		out of Oscilloscope to		
Osc	illoscope.				
Equ:	ipment List:				
1.	Computer (HP-9836S)	4.	Sweep Gen. (HP-8340A)	7.	Plotter (HP-7475A)
2	Printer (HP-2671G)	5.	RF Switch Matrix	8 -	Power Senson (HPL9W811)



Contractor:	Rockwell-Collins
Board Tested:	Antenna Electronics
Test Objective:	To verify that the AE can select the BMFRPA in any
of its three modes with	in the specified time. (BMFRPA Selection)

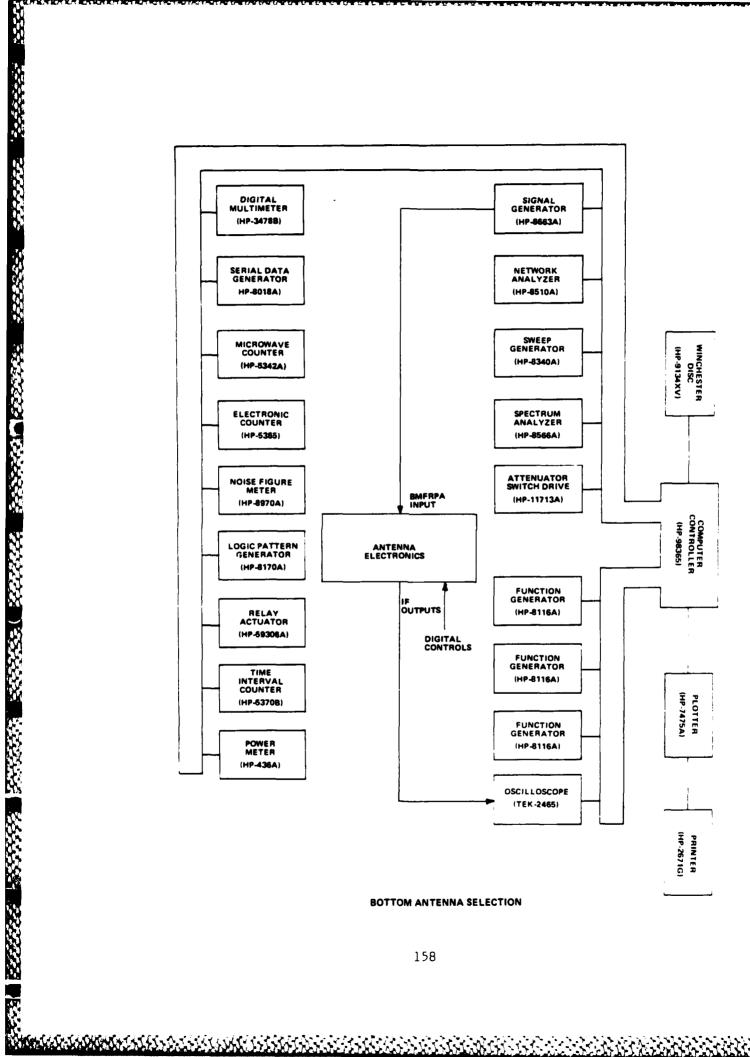
### Inputs

	Input Name	Input Level	Equipment Used
1.	BMFRPA Input	1575MHz @ -45dBm	Signal Gen. (HP-8663A)
2.		1227MHz @ -45dBm	Signal Gen. (HP-8663A)
3.	*Digital Controls	TBD	TBD
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

<sup>\*</sup>May need LO signal

Stock Incoperate processes (withhole popularies presented

	Output Name		Output Level (Cont'd)		Equipment Used
1.	IF Outputs OUTPUT LEVEL CA to P Code 20ms max P to CA Code 20ms max  BMFRPA L2 to L1 10ms max. (1575MHz) BMFRPA L1 to L2 10ms max. (1575MHz)	•	BMFRPA L2 to L1 10 max. (1227MHz) BMFRPA L1 to L2 10 max. (1227MHz) BMFRPA L1 Signal S 10ms max. BMFRPA L2 Signal S 10ms max.	Oms elect	Oscilloscope (TEK-2465)
Tes	t Procedure: T	ırn or	n test equipment. S	et measur	ement equipment
to	proper ranges. On Ll,	-45dE	m signal will be in	jected in	to the BMFRPA
inp	out. The output will be	e obse	erved with an Oscill	oscope an	d each of the
<u>3 m</u>	odes (L1, L2, L1/L2) o	f the	BMFRPA will be sele	cted while	e recording the
<u>swi</u>	tching transients from	the C	scilloscope.	·	
					***************************************
				<del> </del>	
Dat	a Reduction: Se	end ou	stput of Oscilloscop	e to plot	ter and send
_ <u>in</u>	puts to printer. Read	<u>switc</u>	hing time from Osci	lloscope.	
	·				
Equ	ipment List:				
1.	Computer (HP-9836S)	4.	Signal Cen. (HP-8663A)	<u> </u>	
2.	Printer (HP-2671G)	5.	Plotter (HP-7475A)	8.	
3.	Oscilloscope (TEK-2465)	6.		9.	

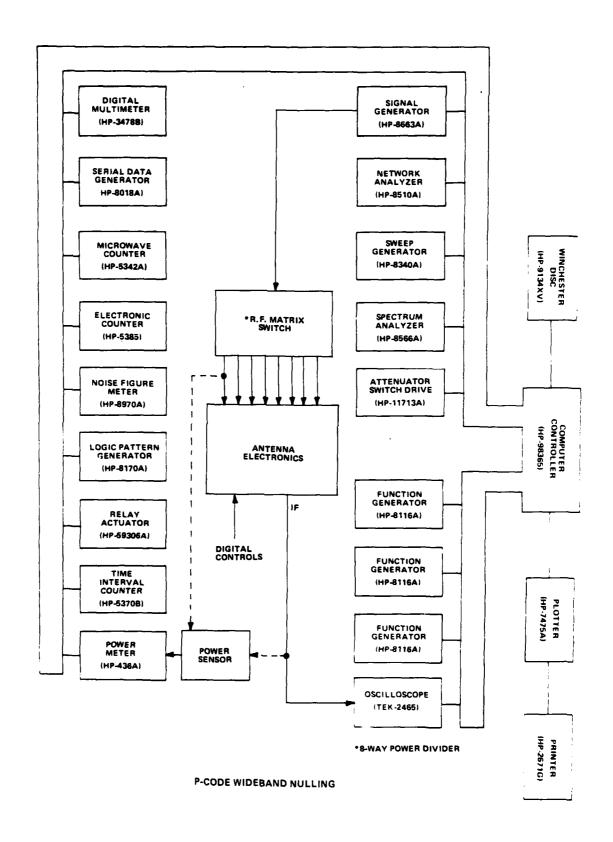


Rockwell-Collins	
Antenna Electronics	
To verify the ability of the AE to nu	ll jammers in
ode wideband nulling)	
<u>Input Level</u>	Equipment Used
	Antenna Electronics  To verify the ability of the AE to nucleon wideband nulling)

1.	CRPA Ref. Input	1575MHz @ -45dBm	Signal Gen. (HP-8663A)
2.	CRPA Aux. Inputs(6)	1575MHz @ -45dBm	Signal Gen. (HP-8663A)
3.	CRPA Ref. Input	1227MHz @ -45dBm	Signal Gen. (HP-8663A)
4.	CRPA Aux. Inputs(6)	1227MHz @ -45dBm	Signal Gen. (HP-8663A)
5.			RF Switch Matrix
6.			Power Sensor (HP-8481A)
7.			Power Meter (HP-436A)
8.	*Digital Controls	TBD	TBD
9.			
10.			
11.			
12.			

<sup>\*</sup>May need LO source

	Output Name	Output Level	Equipment Used
1.	Ll IF Null Depth	35dB (min)	Power Meter (HP-436A)
2.	Ll IF Null Time	10ms (max)	Power Sensor (HP-8481
3.	L2 IF Null Depth	35dB (min)	Oscilloscope (TEK-246
4.	L2 IF Null Time	10ms (max)	
5.		-	
		rn on test equipment. Set me	
		n jammer input level will be Using the Oscilloscope to ob	
Set	performance monitor via	deo output, the nulling time	will be recorded. A
Rep	eat for Ll and L2.	·	·
		input levels and output of Pom Oscilloscope to plotter.	
Equ	ipment List: Computer (HP-9836S)	(RF Matrix Switch) 4. (8-way Power Divider)	7. Oscilloscope (TEK-2465)
2.	Printer (HP-2671G)	5. Power Sensor (HP-8481A)	8.
•			

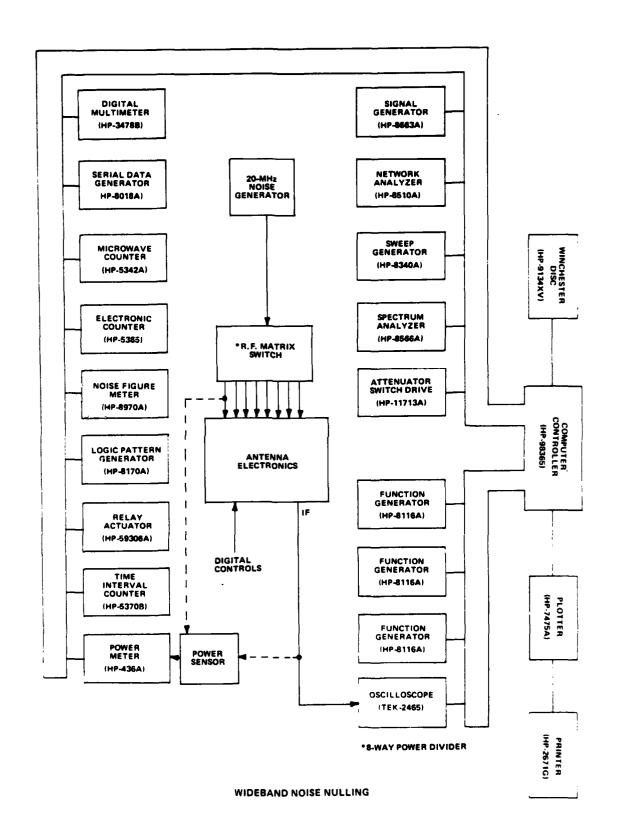


Cont	ractor:	Rockwell-Collins			
Board Tested: Antenna Electronics					
Test	Objective:	To verify the ability of the AE	to null wideband		
noise	e jammers while in t	ne P-code mode. (Wide Band Nois	se Nulling)		
	Inputs				
	inputs				
	Input Name	Input Level	Equipment Used		
1.	CRPA Ref. Input	1575MHz @ -45dBm	Noise Generator (20MHz BW)		
2.	CRPA Aux. Inputs(	6) <u>1575MHz @ -45dBm</u>	Noise Generator (20MHz BW)		
3.	CRPA Ref. Input	1227MHz @ -45dBm	Noise Cenerator (20MH: BW)		
4.	CRPA Aux. Inputs(	6) <u>1227MHz @ -45dBm</u>	Noise Generator (20MHz BW)		
5.			RF Switch Matrix		
6.			Power Sensor (HP-8481A)		
7.			Power Meter (HP-436A)		
8.	*Digital Controls	TBD	TBD		
9.					
10.					
11.					
1 2					

<sup>\*</sup>May need LO source

reserved (sections) sections (sections) sections (sections)

	Output Name		Output Level		Equipment Used
1.	Ll IF Null Depth	-	30dB (min)	_	Power Sensor (HP-8481)
2.	Ll IF Null Time	-	10ms (max)	_	Power Meter (HP-436A)
3.	L2 IF Null Depth	-	30dB (min)	_	Oscilloscope (TEK-2465
4.	L2 IF Null Time	-	10ms (max)	_	
5.		_		_	
Test	Procedure: T	urn on	test equipment. Set	measur	rement equipment
to p	proper ranges. A -45di	Bm wid	eband jammer input lev	el wi]	.l be set up and
P-cc	ode nulling will be se	lected	. Using the Oscilloso	ope to	observe the
outr	out, the Nulling Time	will b	<u>e recorded. A Power M</u>	leter v	vill be used to
meas	sure the AE output power	er (nu	ll depth). Repeat for	Ll an	d L2
Data	a Reduction: Seno	i innu	t lavels and output of	Power	Meter to
<u>pr</u>	inter. Output data fr	On Os	cilioscope to plotter.		
Equ:	ipment List:				
1.	Computer (HP-9836S)	4.	(RF Matrix Switch) 8-way power divider	7.	Oscilloscope (TEK-2465)
2.	Printer (HP-2671G)	5.	Power Sensor (HP-8481A)	8.	
3.	Noise Gen. (20MHz BW)	6.	Power Meter (HP-436A)	9.	



SANDAN SERVICES SANDAN

SANCE OF THE PROPERTY OF THE P

Cont	ractor:	Rockwell-Collins					
Board Tested:		Antenna Electronics					
Test	Test Objective: To verify the ability of the AE to null wideband						
jamm	ers a specified amou	nt while in the C/A mode. (C/A (	Code Nulling)				
	Inputs						
	Input Name	Input Level	Equipment Used				
1.	CRPA Ref. Input	1575MHz @ -78dBm	Sig. Gen. (HP-8663A)				
2.	CRPA Aux. Inputs	6) <u>1575MHz @ -78dBm</u>	Sig. Gen. (HP-8663A)				
3.	CRPA Ref. Input	1227MHz @ -78dBm	Sig. Gen. (HP-8663A)				
4.	CRPA Aux. Inputs	6) 1227MHz @ -78dBm	Sig. Gen. (HP-8663A)				
5.			RF Matrix Switch				
6.			Spectrum Anal. (HP-8566A)				
7.	*Digital Contro	l TBD	TBD				
8.							
9.							

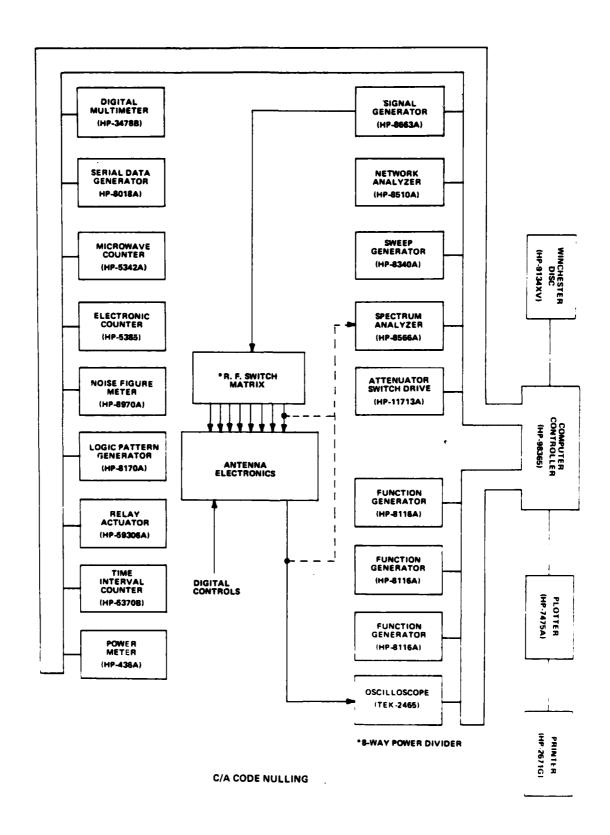
10.

11.

12.

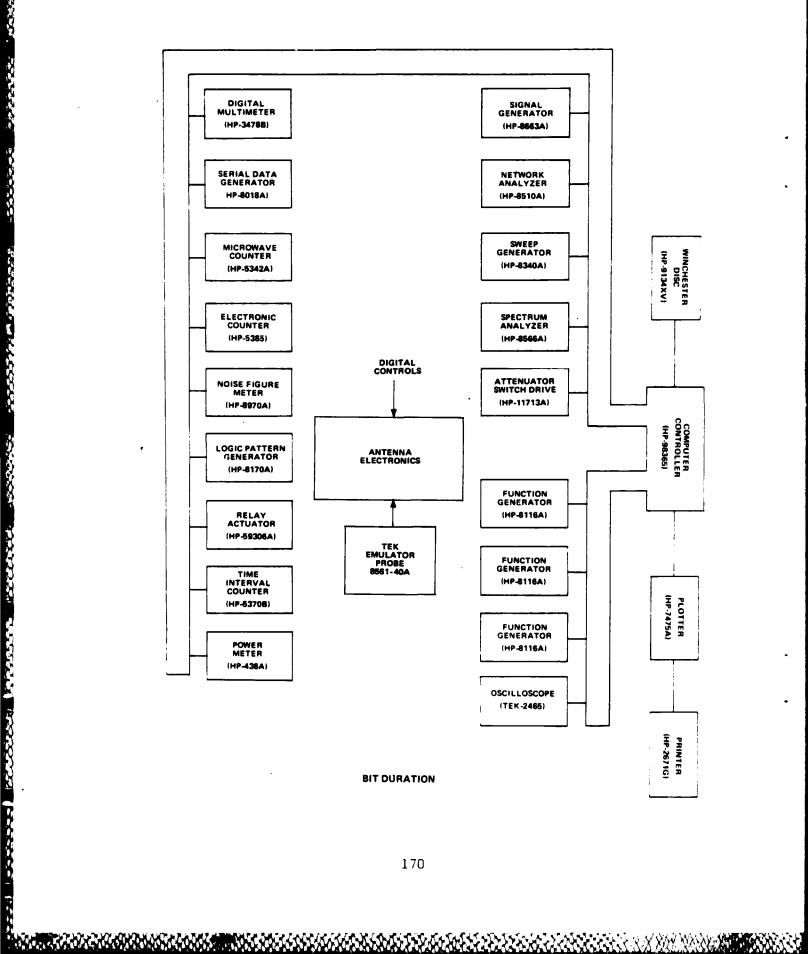
<sup>\*</sup>May need LO source

	Output Name	Output	Level		Equipment	Used
<u>Ll</u>	IF Null Depth	25dB	(min)	٤	Spectrum Anal.	(HP-85662
. <u>L1</u>	IF Null Time	100ms	(max)	2	Scilloscope (	<b>TEK-</b> 2465)
L2	IF Null Depth	25dB	(min)	_		
. <u>L2</u>	IF Null Time	100ms	(max)	_		
·				_		
to prope C/A code observe will be	ocedure: Turner ranges. A jammer nulling mode will the output, the null used to monitor the	r input level on be selected. ' lling time will e AE IF output	F -78dBm will The Oscillosoc be recorded.	be set  ppe wil  A Spe	up and the l be used to	- - r.
	eduction: Seno		_ ·	-		<u>o</u> —
Equipme	ent List:					
. <u>Com</u>	puter (HP-9836S)	•	x Switch) er <u>Divider)</u>	7	Plotter (HP-74	<u>475A)</u>
2. <u>Pri</u>	nter (HP-2671G)	5. Spec. Analy	zer (HP-8481A)	8		
3. <u>Sig</u> .	Gen. (HP-8663A)	6. <u>Oscillosco</u> r	e (TEK-2465)	9		



Con	tractor:	Rockwell-Collins	
Boar	rd Tested:	Antenna Electronics	
Tes	t Objective:	To measure the AE BIT duration.	The BIT duration
sha:	ll be 834μs +10μs (Β	IT Duration)	·
	Inputs		
	Input Name	Input Level	Equipment Used
1.	Z80	TBD	TEK emulator probe (TEK 8561-40A)
2.	Digital Controls	TBD	TBD
3.			
4.			
5.			
6.		·	
7.			
8.			
9.			
10.			
11.			
12.			

	Output Name	Output Level	Equipment Used
1.			
2.			
3.			<del></del>
4.	<del></del>		
5.			
J.		-	
Tag	t Procedure: mw	m en tost omirment. S	et measurement equipment
			ne TEK(8561-40A) in
		<del>-</del>	3 so that only on BIT
			ration of BIT. At the
	-		
_		_	ipment be purchased
Deca	ause or cost. Afterati	ons are currently being	studied.
Dat:	a Reduction. Sen	d input and output level	s to printer.
<u> </u>	a Reduction.	a input and odopat ievo.	o to primer.
	<del></del>		
Equ.	ipment_List:		
1.	Computer (HP-9836S)	4.	7.
2.	Printer (HP-2671G)	5	8.
3.	Tektronics Probe (8561-40A)	6.	9.



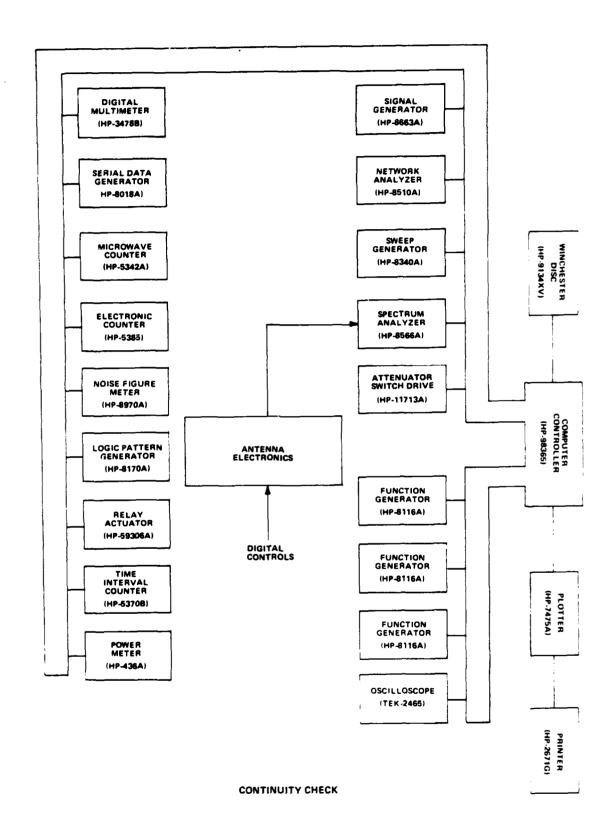
0000000

HERECLA MARKETS

Cont	ractor:	ROCKWell-Collins	
Boar	d Tested:	Antenna Electronics	
Test	Objective:	To verify the quality of cable co	nnections between
the	functional blocks of	the AE (LRU's). (Continuity Che	ck)
	Inputs		
	Input Name	Input Level	Equipment Used
1.	Digital Controls	TBD	TBD
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

12.

Output Name Output Level Equipment Used  1. AE Output 10dB change Spectrum Aral. (HP-6566A  2. 3. 4. 5.  Test Procedure: Turn on test equipment. Set measurement equipment to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7. 2. Printer (HP-2671G) 5. 8. 3. Plotter (HP-7475A) 6. 9.		Outputs					
2. 3. 4. 5. Test Procedure: Turn on test equipment. Set measurement equipment to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HF-8566A) 7. 2. Printer (HP-2671G) 5. 8.		Output Name		Output Level		Equipment Used	
Test Procedure: Turn on test equipment. Set measurement equipment to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A lodB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	1.	AE Output		10dB change		Spectrum Anal. (HP-8566)	<u>A</u>
Test Procedure: Turn on test equipment. Set measurement equipment to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	2.				•		
Test Procedure: Turn on test equipment. Set measurement equipment to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A lodB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HF-8566A) 7.  2. Printer (HP-2671G) 5. 8.	3.						_
Test Procedure: Turn on test equipment. Set measurement equipment to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-2566A) 7.  2. Printer (HP-2671G) 5. 8.	4.						
to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	5.						_
to proper ranges. Continuity will be checked by observing the change in the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A lodB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.							
the level of the noise floor when the weights are switched from the minimum noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	Tes	st Procedure: Tu	ırn on	test equipment. Set r	neasur	ement equipment	
noise condition to maximum noise condition. This will be shown by observing the output. A 10dB change will verify the test.  Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	to	proper ranges. Continu	ity w	ill be checked by obser	ving	the change in	
Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	the	e level of the noise flo	or who	en the weights are swit	ched	from the minimum	
Data Reduction: Send output of Spectrum Analyzer to plotter and send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	noi	ise condition to maximum	nois	e condition. This will	l be s	shown by observing	
<pre>send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.</pre>	the	e output. A 10dB change	will	verify the test.			
<pre>send inputs to printer.</pre> Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.							
<pre>send inputs to printer.  Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.</pre>							
<pre>send inputs to printer.</pre> Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.							
Equipment List:  1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.				<del>, , , , , , , , , , , , , , , , , , , </del>		· · · · · · · · · · · · · · · · · · ·	
1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.	Dat	a Reduction: Se	end ou	tput of Spectrum Analyz	er to	plotter and	
1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.			end ou	tput of Spectrum Analyz	er to	plotter and	
1. Computer (HP-9836S) 4. Spectrum Anal. (HP-8566A) 7.  2. Printer (HP-2671G) 5. 8.			end ou	tput of Spectrum Analyz	er to	plotter and	
2. Printer (HP-2671G) 5. 8.			end ou	tput of Spectrum Analyz	er to	plotter and	
2. Printer (HP-2671G) 5. 8.	se	nd inputs to printer.	end ou	tput of Spectrum Analyz	er to	plotter and	
	se	nd inputs to printer.	end ou	tput of Spectrum Analys	zer to	plotter and	
3. Plotter (HP-7475A) 6. 9.	se Eq.	nd inputs to printer.				plotter and	
	_se Equ	nd inputs to printer.  nipment List:  Computer (HP-9836S)	4.		7.	plotter and	
	Equ 1. 2.	nd inputs to printer.  nipment List:  Computer (HP-9836S)  Printer (HP-2671G)	4.		7.	plotter and	
	Equ 1. 2.	nd inputs to printer.  nipment List:  Computer (HP-9836S)  Printer (HP-2671G)	4.		7.	plotter and	
172	Equ 1.	nd inputs to printer.  nipment List:  Computer (HP-9836S)  Printer (HP-2671G)	4.	Spectrum Anal. (HP-8566A)	7.	plotter and	

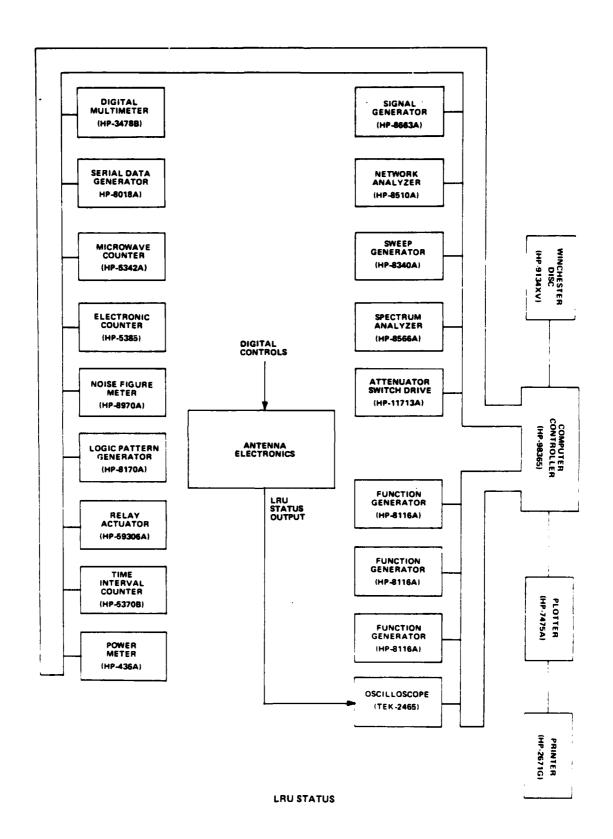


<pre>Contractor: Board Tested:</pre>		Rockwell-Collins			,
		Antenna Electronics			
Test	Objective:	To demonstrate that the LRU status is set to state			set to state
1 dur	ring normal operati	on in nul	l steering mode.	(LRU Status	)
	Inputs				
	Input Name		Input Level		Equipment Used
1.	Digital Control	<u>s</u>	TBD		TBD
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					

12.

# Outputs

Output Nar	<u>ne</u>	Output Level		Equipment Used
l. <u>LRU Status</u>	·	OK		Oscilloscope (TEK-2465)
2 3				
4.	<del>-</del>			
5.				
Test Procedure: to proper ranges. Ma				<del>-</del>
steering mode.		cus during norman		
		·		
Data Reduction:		evels to printer		
<del>-</del>	<del></del>			
Equipment List:				
1. Computer (HP-983	6S) 4P	lotter (HP-7475A	<u>)</u> 7.	
2. Printer (HP-2671	G) 5	<u></u>	8.	
3. Oscilloscope (TEK-24	65) 6.		9.	

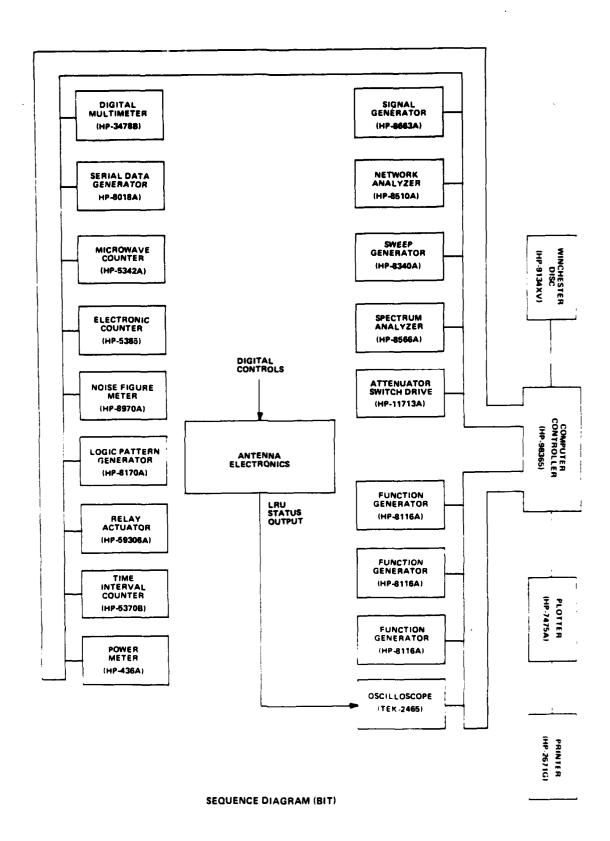


Contractor:		ROC	kwell-Collins				
Board Tested:		Anter	na Electronics	<del></del>			
Test	Objective:	To verify	that the timing	of events	<u>is as</u>	specified_	
(Sequ	uence Diagram BIT)		· · · · · · · · · · · · · · · · · · ·	<del></del>			
	Inputs						
	Input Name		Input Level		Equi	ipment Used	
1.	Digital Control	<u>s</u>	TBD	<del></del>		TBD	
2.							
3.							
4.						<del></del>	
5.		<del>-</del>					
6.							
7.							
8.							
9.					-		
10.							
11.		<del></del>					
·				<del></del>			-

12.

# Outputs

	Output Name		Outpu	t Level		Equipment Used	Ī
l. ,	LRU Status Line	_		OK		Oscilloscope (TEK-2465)	
2.		=		·			
3.		_			_		
4.					_		
5.							
		-					_
[est	Procedure: Tu	rn on	test equi	pment. Set :	measuren	ment equipment	
	coper ranges. The seq						
	loscope connected to						
	11000000 001111000000 00	orio pri	o coucas				
			<del></del>				
Data	Reduction: Send	input	levels to	printer and	output	of Oscillo-	
scope	e to plotter.						
				- <del></del>			
Equi	pment List:						
l.	Computer (HP-9836S)	4.	Plotter	(HP-7475A)	7		
	Printer (HP-2671G)				8.		
	Oscilloscope (TEK-2465)				9.		



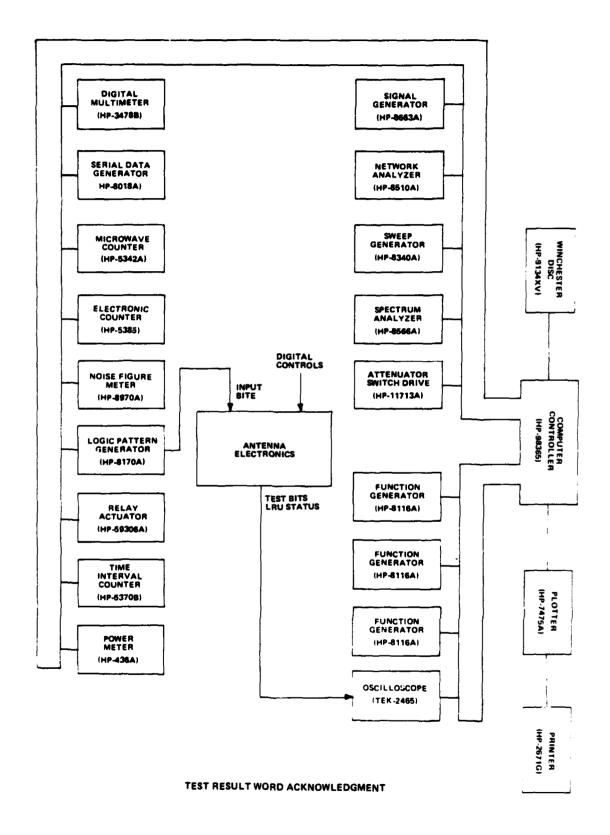
<u>Contractor</u> :	Rockwell-Collins
Board Tested:	Antenna Electronics
Test Objective:	To demonstrate that the AE generates and transmits
the acknowledgement and	the test result word. (Test result word acknowledge-
ment)	

# Inputs

Con	tractor:	Rockwell-Collins	
Boa	rd Tested:	Antenna Electronics	
Tes	t Objective: To de	emonstrate that the AE gen	erates and transmits
the	acknowledgement and the t	test result word. (Test r	esult word acknowledge-
_men	t)		
	Inputs		
	Input Name	Input Level	Equipment Use
•			
1.	BITE (command BIT)	TBD	Logic Pattern Gen. (HP
2.	Digital Controls	TBD	TBD
3.			
4.			
5.			
6.			<del></del>
7.			
8.			
9.			-
10.			
11.			
12.			
		180	

# Outputs

	Output Na	me	Output Level		Equipment Used
1.	LRU Status Outp	out	OK		Oscilloscope (TEK-2465)
2.					
3.					
4.			-		
5.		<del>-</del>		<del></del> -	
<u>Test</u>	Procedure:	Turn on	test equipment.	Set measure	ment equipment
to p	roper ranges. I	nput BITE ar	nd record LRU Stat	us output o	Oscilloscope.
	·				
<u>Data</u>	Reduction:	Send inpu	ut levels to print	er and outpu	at of Oscillo-
scope	e to plotter. V	erify that f	format and length	of test resu	ult word is
as s	pecified.	·		· · · · · · · · · · · · · · · · · · ·	
Equi	pment List:				
1.	Computer (HP-98	36S) 4.	Log. Patt. Gen. (HP-	8170A) 7.	
2.	Printer (HP-267	<u>1G)</u> 5.		8	
3.	Oscilloscope (TEX-3	2/.5E\ 6.		9.	



STATES STATES STATES

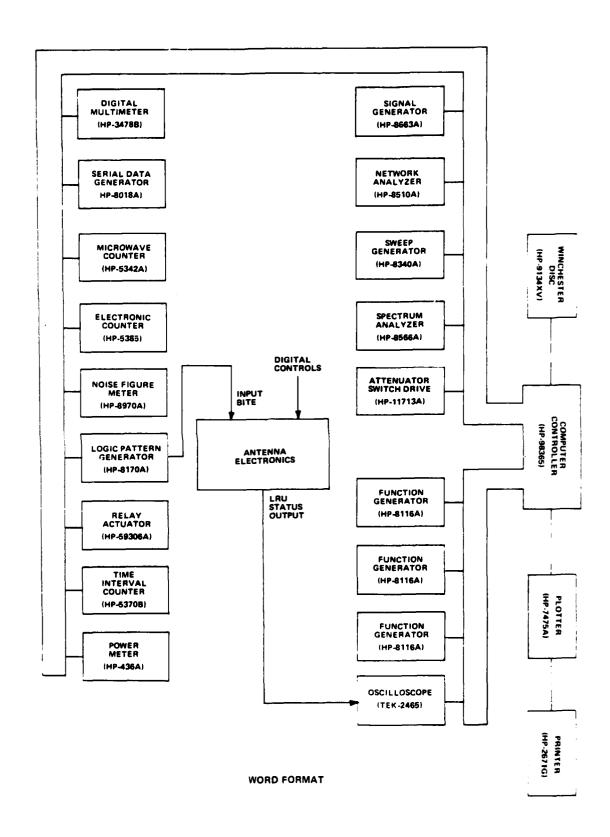
Section 1

Contractor:	Rockwell-Collins	
Board Tested:	Antenna Electronics	
Test Objective:	To demonstrate that the AE gen	erates and transmits
the result word. (	Nord Format)	
Inputs		
Input Name	Input Level	Equipment Used
1. BITC	TBD	<u>Logic Pattern Generator</u> (HP-8170A)
2. <u>Digital Conti</u>	colsTBD	TBD
3.		
4.		
5.		
6		
7.		
8.		
9.		
10.		_
11.		

12.

# Outputs

	Output Name	Output Level	Equipment Used
l.	LRU Status Output	TBD	Oscilloscope (TEK-2465)
2.			
3.			
4.			
5.			
•			
Test	Procedure:	urn on test equipment. Set mea	asurement equipment
		BITC and record LRU status out	out on an Oscillo-
scop			
<u> </u>			
_			
			<del> </del>
		end input levels to printer and	d output of Oscillo-
scop	e to plotter.		<del></del>
Equi	pment List:		
1.	Computer (HP-9836S)	4. Oscilloscope (TEK-2465)	7
	Printer (HP-2671G)		3.
	Logic Patt. Cen. (HP-817)	<del></del>	



## 4.0 SOFTWARE REQUIREMENTS

This section contains the software requirements for the bench test procedures defined in Section 3. These software requirements are defined in terms of flowcharts.

The software requirements contained herein are written at the functional level. There is a flowchart for each test procedure that illustrates the sequence of events that will be required in order to perform these tests by computer. In addition to these requirements, all tests will include the following:

- o menu driven testing will prompt operator through:
  - 1. test set-ups
  - 2. testing
  - data reduction/storage/hardcopy
- o Each test will have a program module number and will be contained in a testing menu. All tests with the same set-up can be grouped together to be run one after the other.
- o Each test will incorporate a full error-checking capability during operator inputs so that no manual error can be entered into the system.
- O Data reduction based on baseline data and/or range limits. The specified range values and/or tolerance will be stored and compared to the results obtained from the actual test. The values will be displayed and any differences can quickly be seen.
- o There will be real-time monitoring for any bus available information during testing.
- o There will be off-line storage or transfer of data for interfacing with the DPSSF/NSL system capabilities. This capability will be used for any information that is needed for the DPSSF, NSL or RFL.

- o All software will be stored including back-up disks and hardcopy listings, in a library which will contain as a minimum, the following information in its catalog:
  - 1. program module name and number (disk #)
  - 2. back-up copy # (disk #)
  - 3. data written, by whom
  - 4. date last revised, by whom

There are two floppy disk drives which have a memory of 170k each built into the computer. All information will be stored on either of these floppy disks. There is also a Winchester hard disk provided. This can be used as a temporary storage for data and information obtained while testing, if needed. For example, if a series of tests are being run and many data points are needed to be stored and all of the memory is being used in the computer, the information is stored temporarily on the Winchester disk until processing is complete and then archived onto the floppy disks.

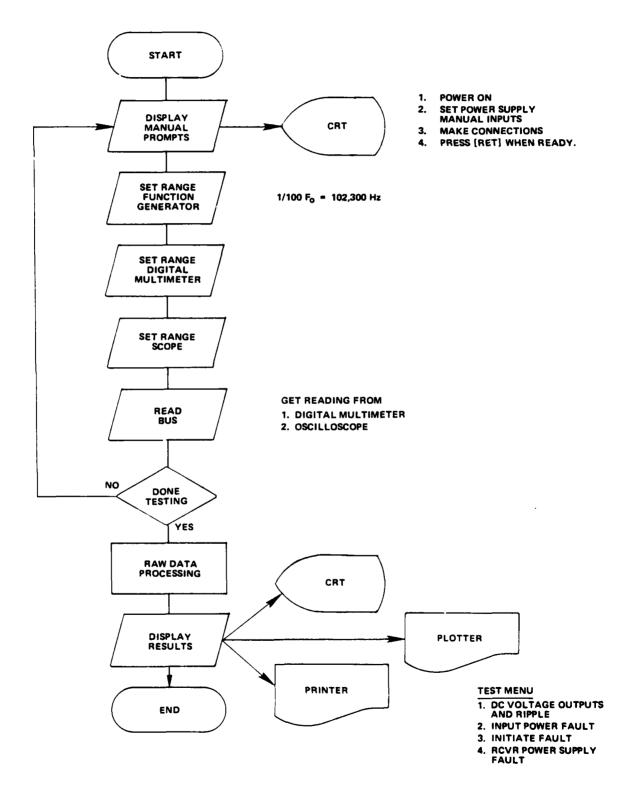
## 4.1 ROCKWELL-COLLINS SOFTWARE REQUIREMENTS

The following sheets contain the software requirements for the Bench Test Procedures for each of the boards identified in section 3.1. The software requirements will also be refined and expanded as more detailed information becomes available for the bench tests.

4.1.1 POWER SUPPLY MODULE

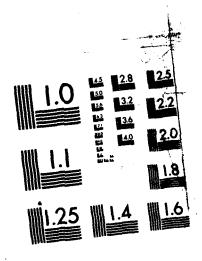
#### POWER SUPPLY MEASUREMENTS

PROGRAM MODULE NUMBER:



RANGE RESERVED BY THE PROPERTY OF THE PROPERTY

UE BENCH TEST PLANS AND REQUIREMENTS VOLUME 2
ROCKHELL-COLLINS UE SET(U) ESSCUBE ENGINEERING INC
MARLTON NJ SEP 84 CER/GPS-85-156-00-030-VOL-2
N62269-82-D-0059 F/G 14/2 3/3 AD-A166 498 UNCLASSIFIED

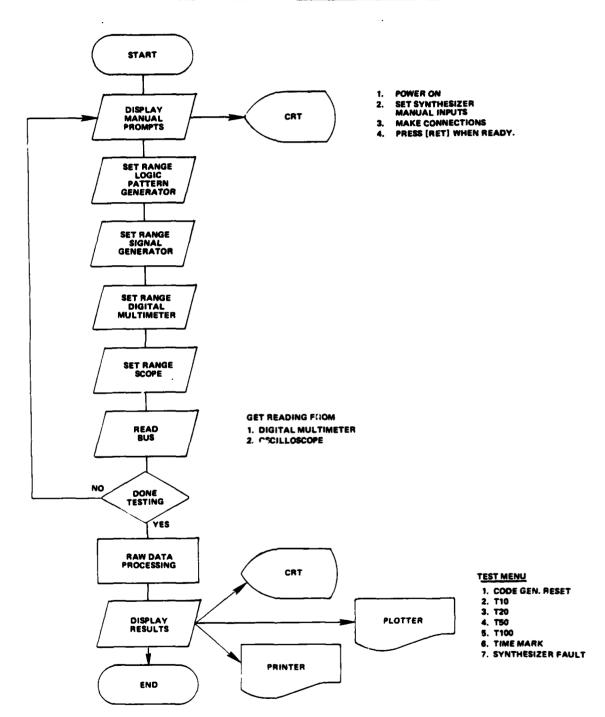


MICROCOPY RESOLUTION TEST CHART
MATERIAL BUREAU OF STANDARD THE THE

4.1.2 RF SYNTHESIZER MODULE

### VERIFY OPERATION OF DIGITAL CONTROL SIGNALS

PROGRAM MODULE NAME: \_\_\_\_\_\_

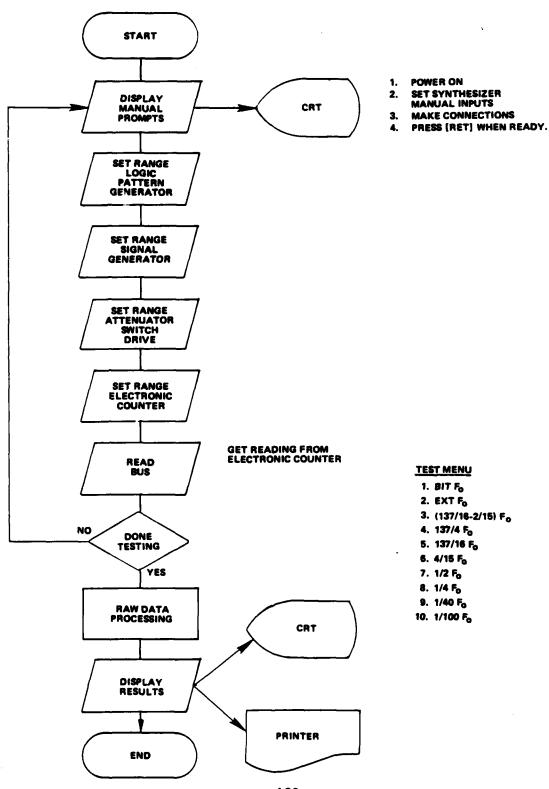


## **OUTPUT FREQUENCY MEASUREMENT**

1

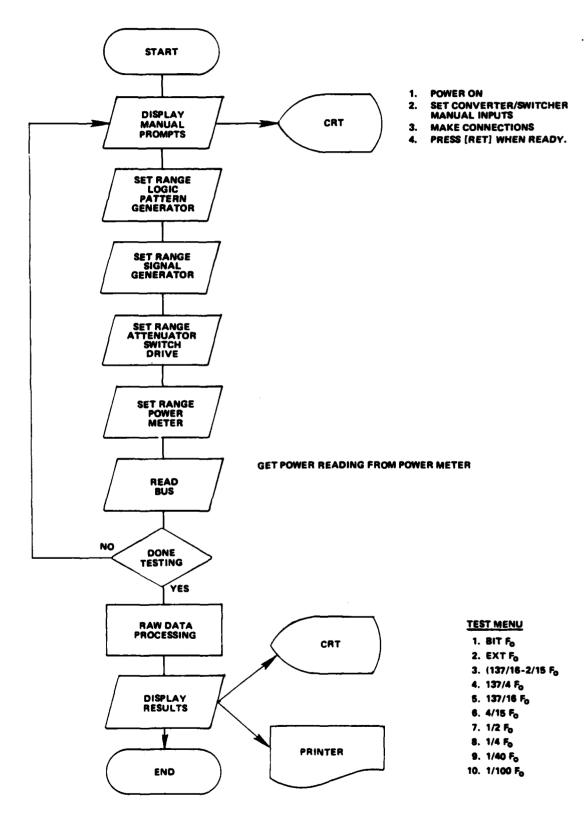
Topicon Indicate Version Property Statement Statement Statement Property Statement

PROGRAM MODULE NAME: \_\_\_\_\_\_



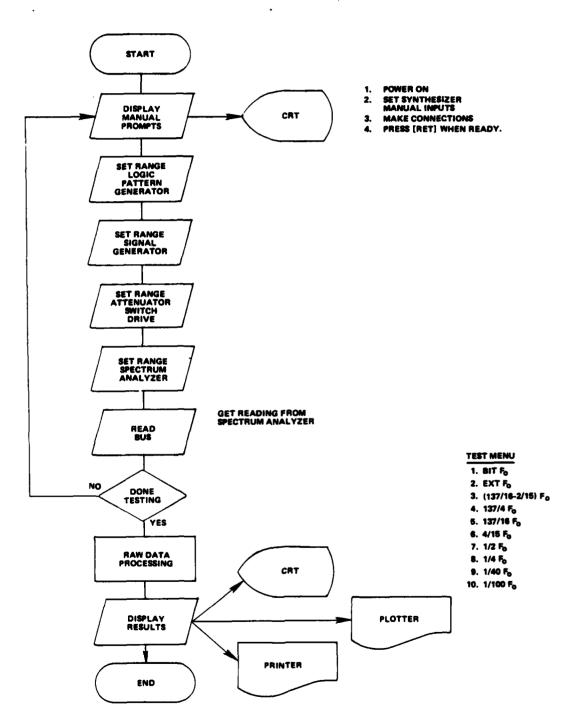
#### **OUTPUT POWER MEASUREMENT**

### PROGRAM MODULE NAME:



#### MEASURE SPECTRAL CONTENT

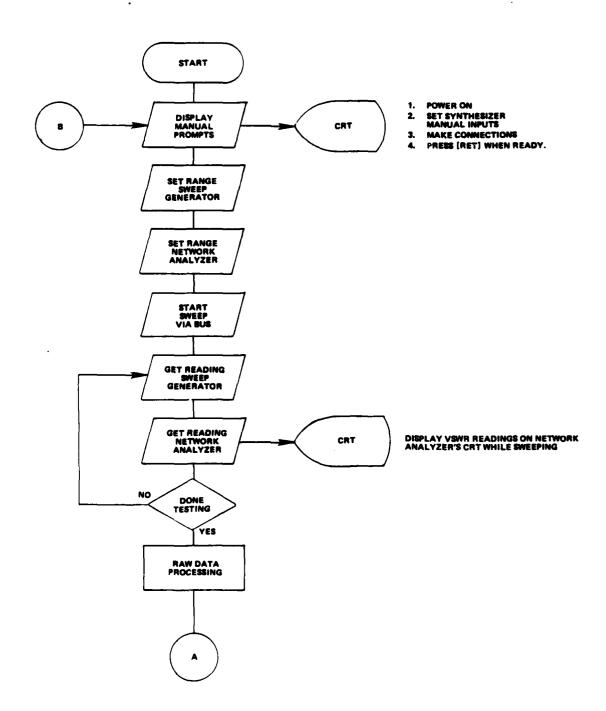
PROGRAM MODULE NAME: \_\_\_\_\_\_

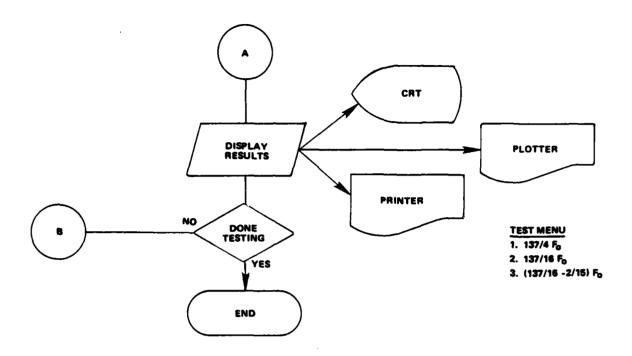


CANADARA TANDARA CANADARA MANADARA

AND THE PROPERTY OF THE PROPER

PROGRAM MODULE NAME:

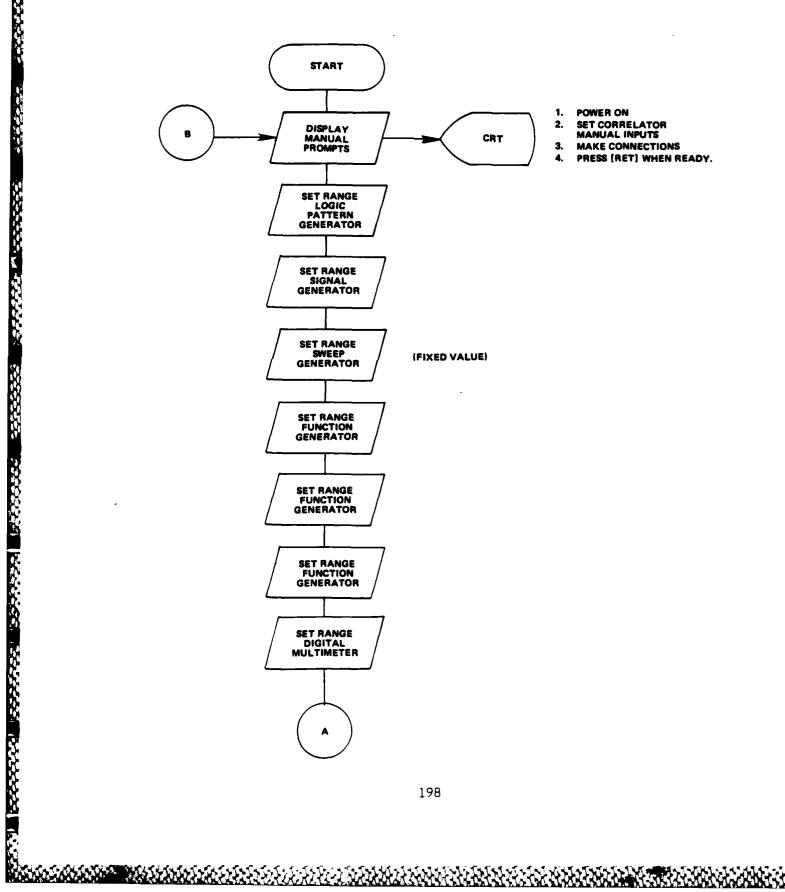




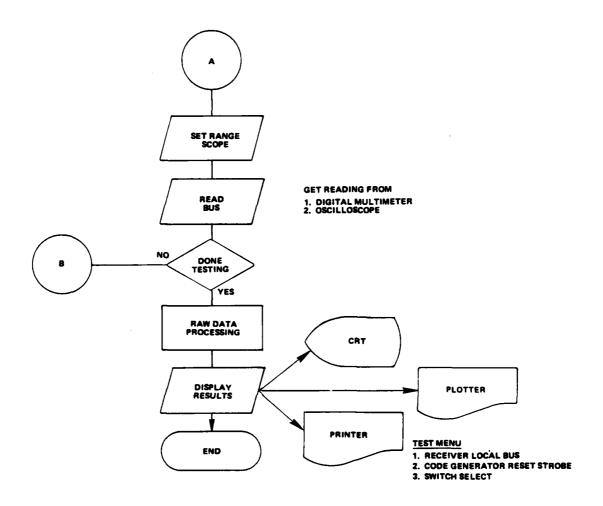
4.1.3 CORRELATOR MODULE

#### **CORRELATOR DIGITAL SIGNALS**

PROGRAM MODULE NAME: \_



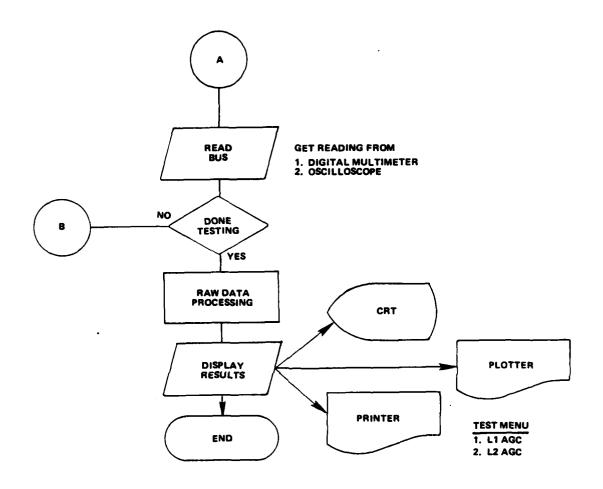
- POWER ON 1.
- SET CORRELATOR MANUAL INPUTS 2.
- **MAKE CONNECTIONS**
- PRESS [RET] WHEN READY.



4.1.4 IF PROCESSOR MODULE

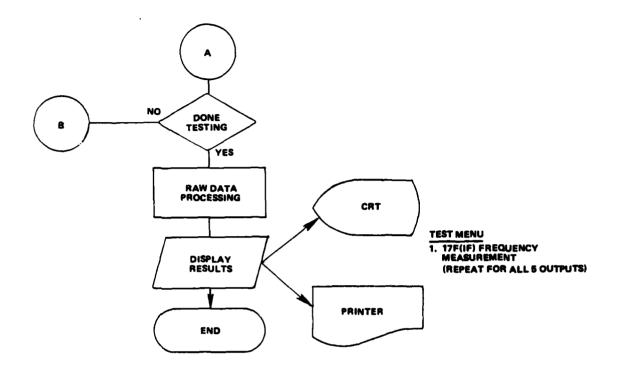
#### AGC MEASUREMENT

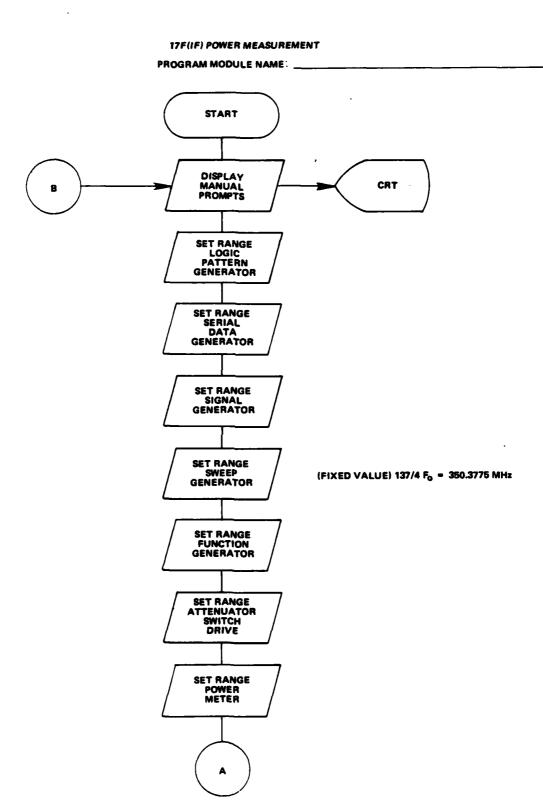
PROGRAM MODULE NAME: \_ START POWER ON DISPLAY MANUAL PROMPTS SET IF PROCESSOR MANUAL INPUTS 2. CRT 3. MAKE CONNECTIONS PRESS [RET] WHEN READY. SET RANGE LOGIC PATTERN GENERATOR SET RANGE SERIAL DATA GENERATOR SET RANGE SIGNAL GENERATOR SET RANGE SWEEP GENERATOR (FIXED VALUE) 137/4 Fo = 350.3775 MHz SET RANGE FUNCTION GENERATOR SET RANGE DIGITAL MULTIMETER SET RANGE SCOPE

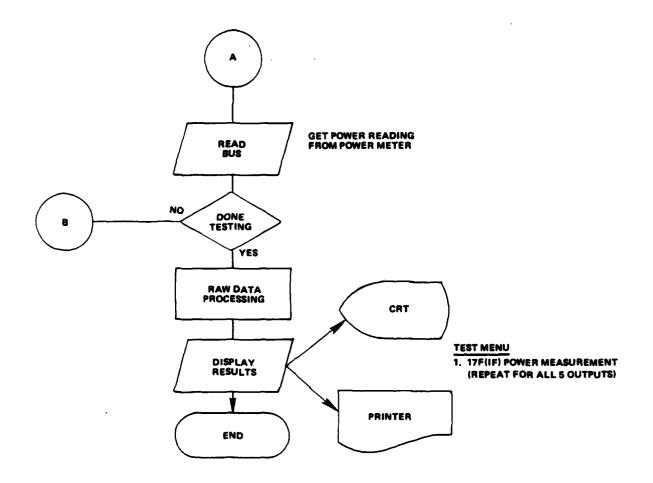


CORRECT PROPERTY PROPERTY OF TRANSPORT

17F(IF) FREQUENCY MEASUREMENT PROGRAM MODULE NAME: START POWER ON SET IF PROCESSOR MANUAL INPUTS DISPLAY MANUAL PROMPTS CRT MAKE CONNECTIONS PRESS [RET] WHEN READY. SET RANGE LOGIC PATTERN GENERATOR SET RANGE SERIAL DATA GENERATOR SET RANGE SIGNAL GENERATOR SET RANGE SWEEP GENERATOR (FIXED VALUE) 137/4 Fo = 350.3775 MHz SET RANGE FUNCTION GENERATOR SET RANGE ELECTRONIC COUNTER GET FREQUENCY READING FROM ELECTRONIC COUNTER



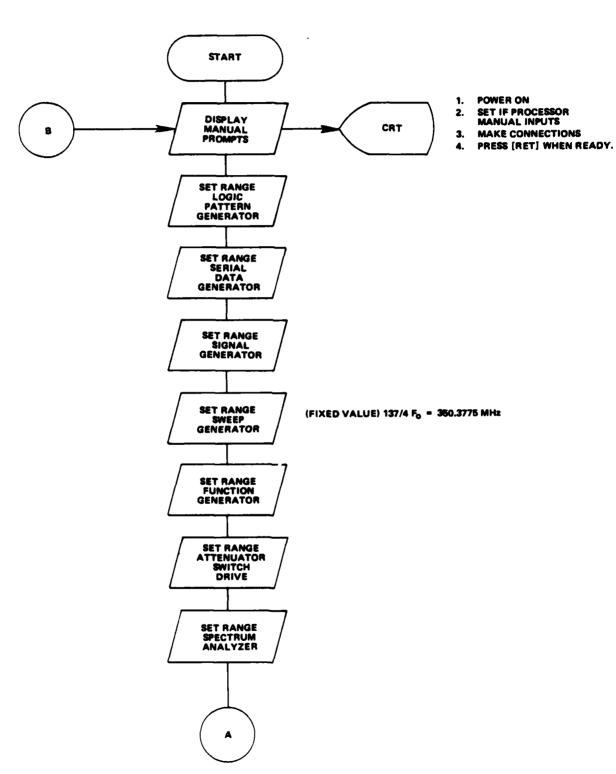


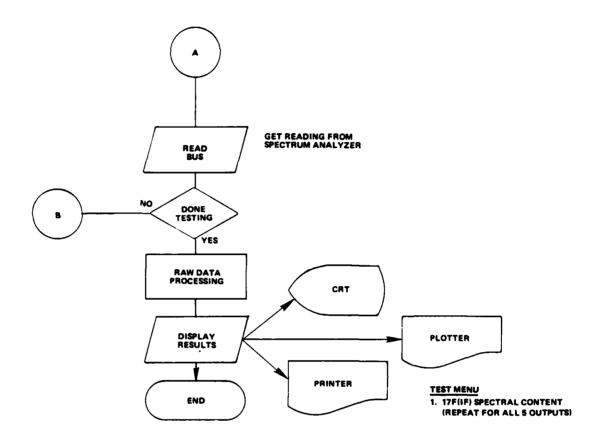


Increses and services haddood and addood

### 17F(IF) SPECTRAL CONTENT

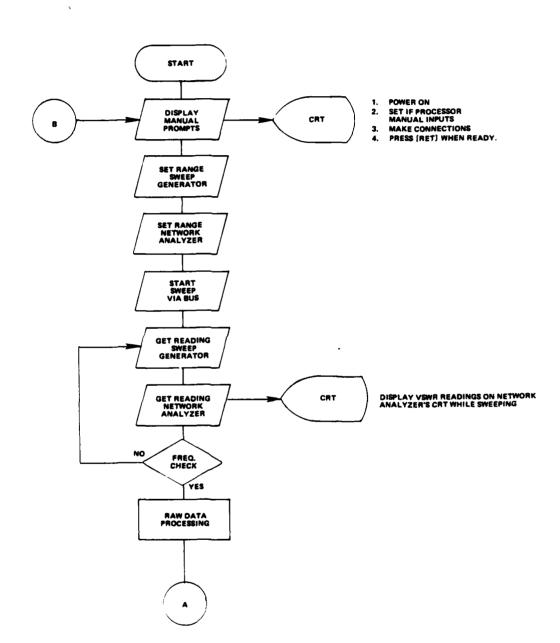
PROGRAM MODULE NAME: \_\_\_\_\_

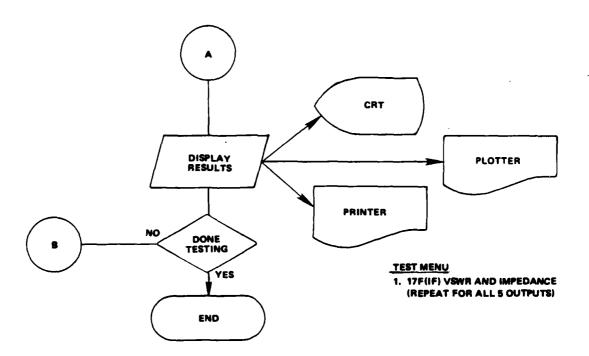




# 17F(IF) VSWR AND IMPEDANCE MEASUREMENT

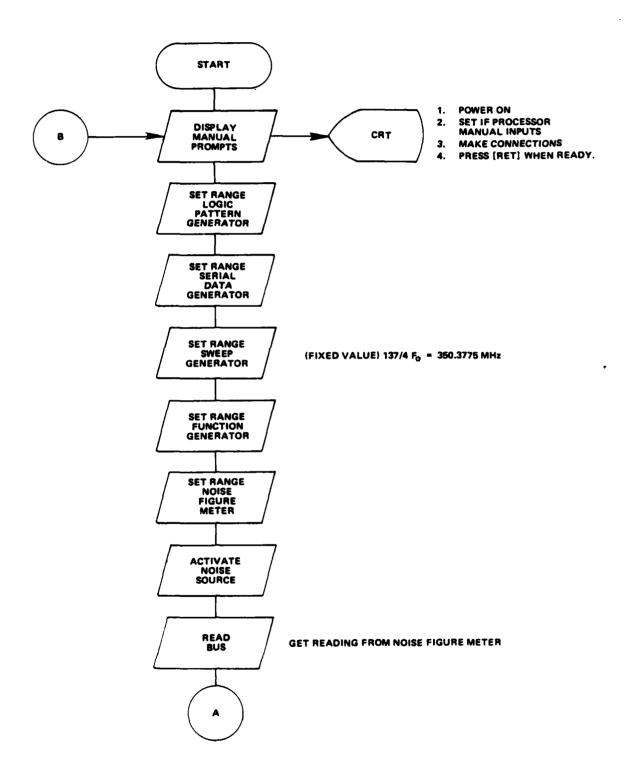
PROGRAM MODULE NAME:

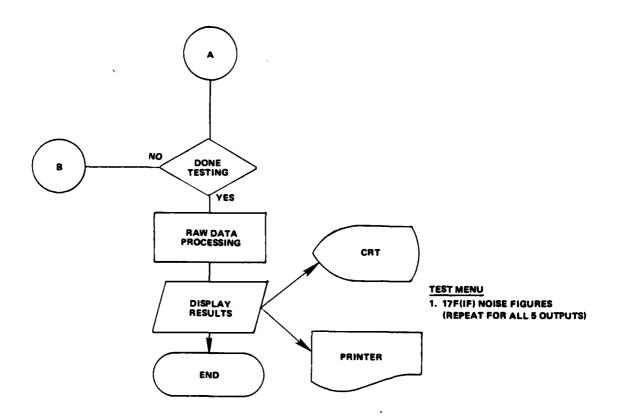




# 17F(IF) NOISE FIGURE MEASUREMENT

PROGRAM MODULE NAME:



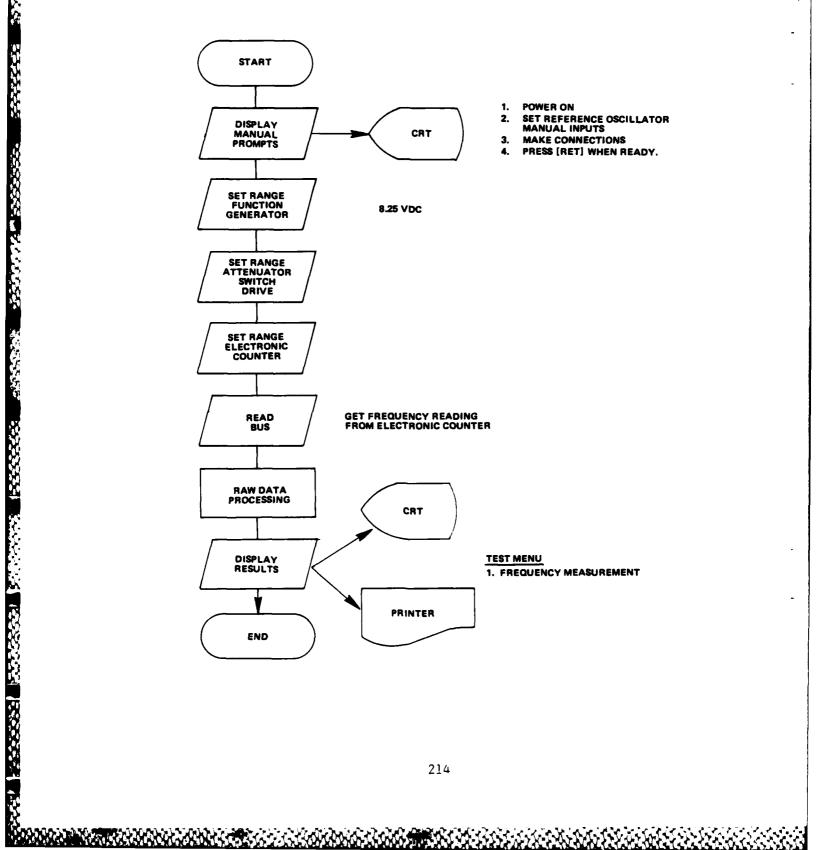


4.1.5 REFERENCE OSCILLATOR MODULE

#### FREQUENCY MEASUREMENT

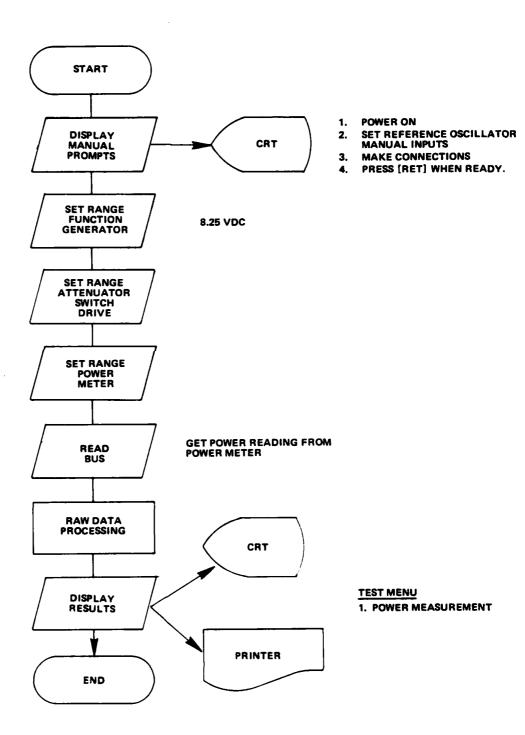
STATES BY STATES CONTRACTOR SERVICES

PROGRAM MODULE NAME:



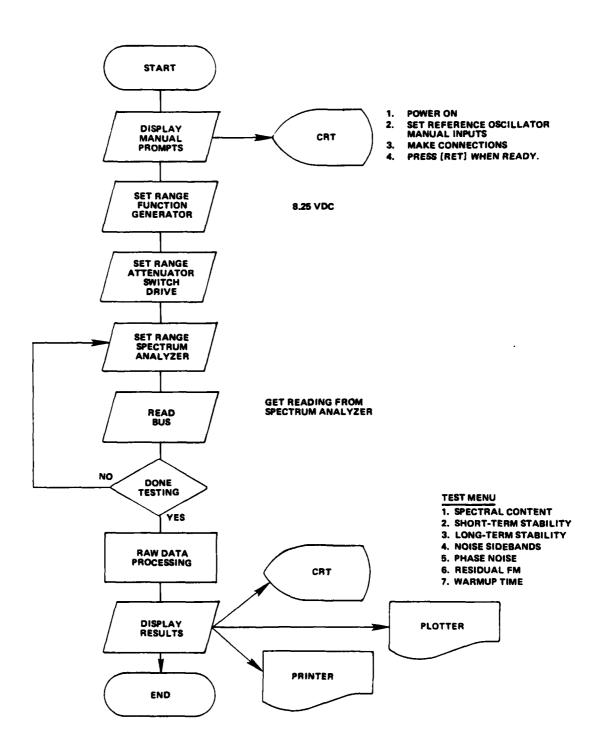
#### **POWER MEASUREMENT**

PROGRAM MODULE NAME: \_\_\_\_\_\_



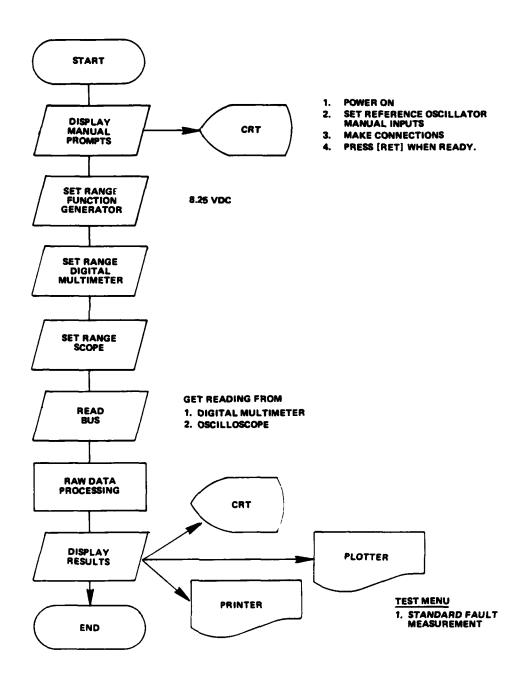
# SPECTRAL CONTENT MEASUREMENTS

PROGRAM MODULE NAME: \_\_\_\_\_



#### VERIFY STANDARD FAULT

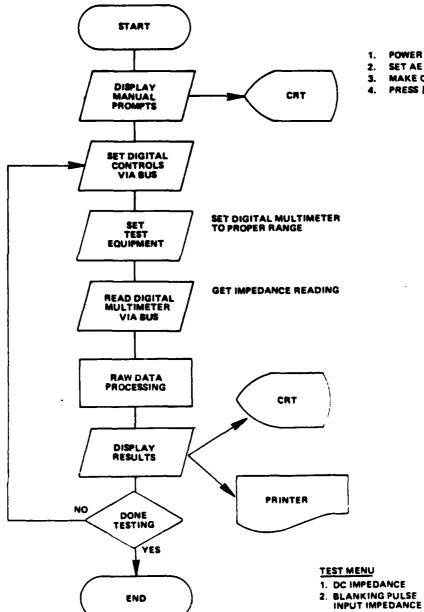
PROGRAM MODULE NAME: \_\_\_\_\_\_



4.1.6 ANTENNA ELECTRONICS

#### OC IMPEDANCE AND BLANKING PULSE INPUT IMPEDANCE

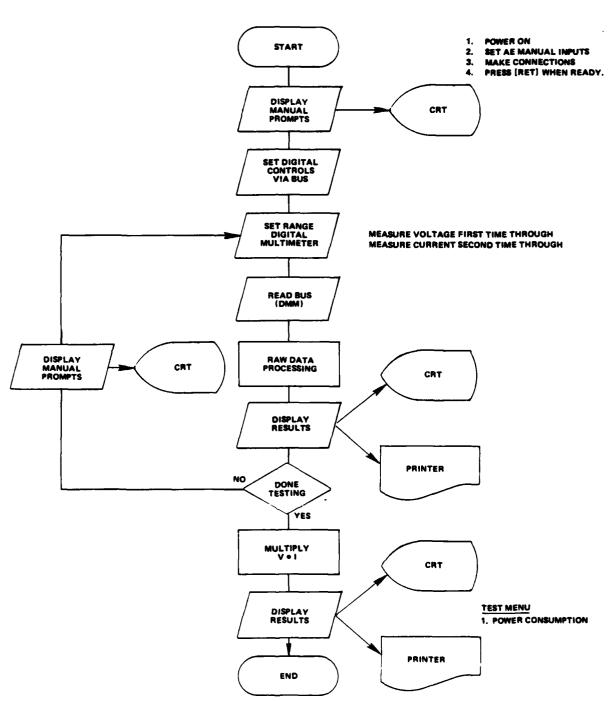
PROGRAM MODULE NAME:



- 1. POWER ON
- SET AE MANUAL INPUTS
- MAKE CONNECTIONS
- PRESS [RET] WHEN READY.

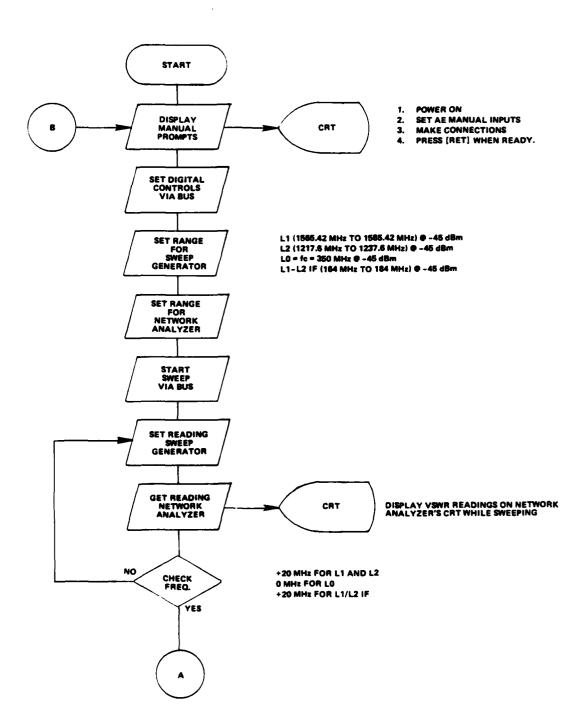
#### POWER CONSUMPTION

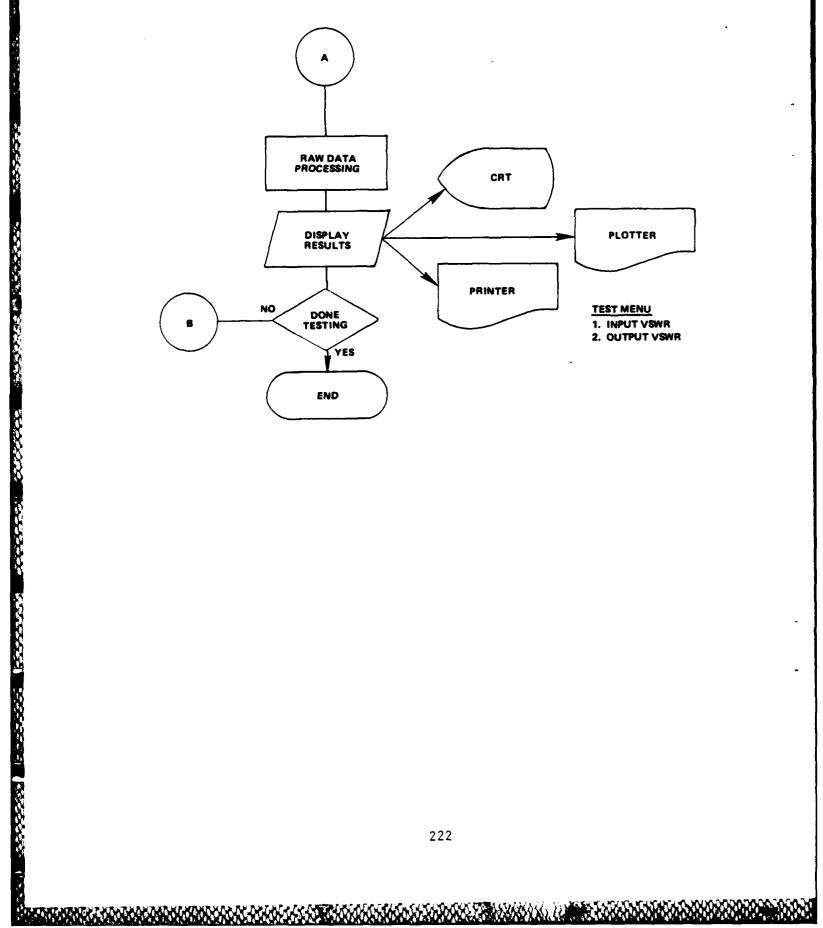
PROGRAM MODULE NAME: \_\_\_\_\_



#### INPUT/OUTPUT VSWR

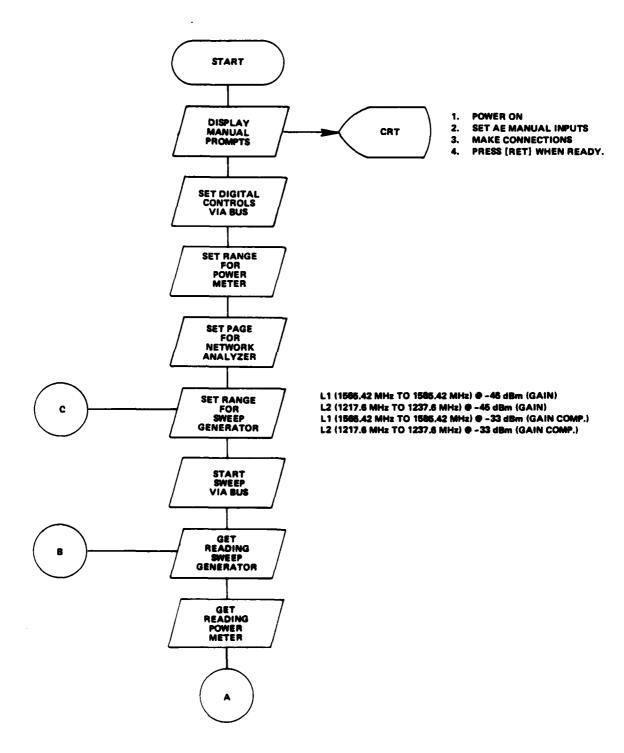
PROGRAM MODULE NAME: \_\_\_\_\_

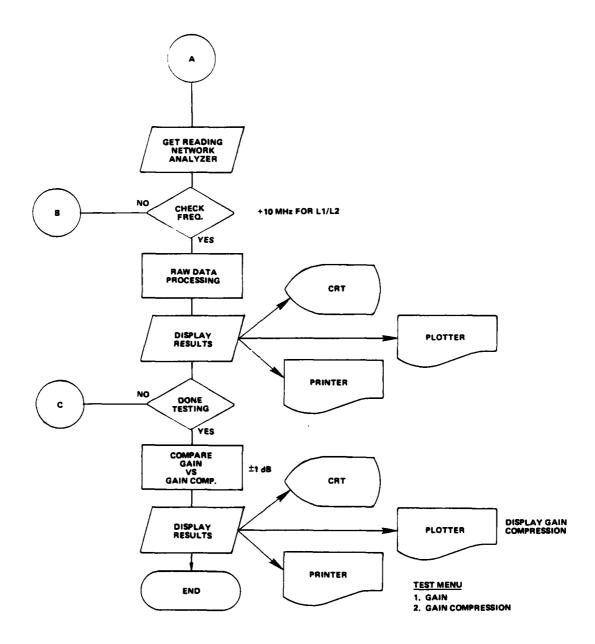




#### **GAIN AND GAIN COMPRESSION**

PROGRAM MODULE NAME: ,



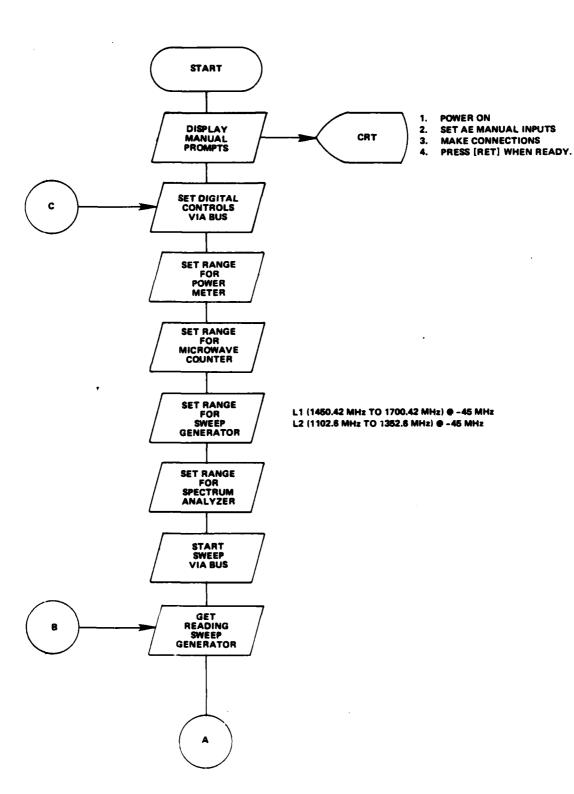


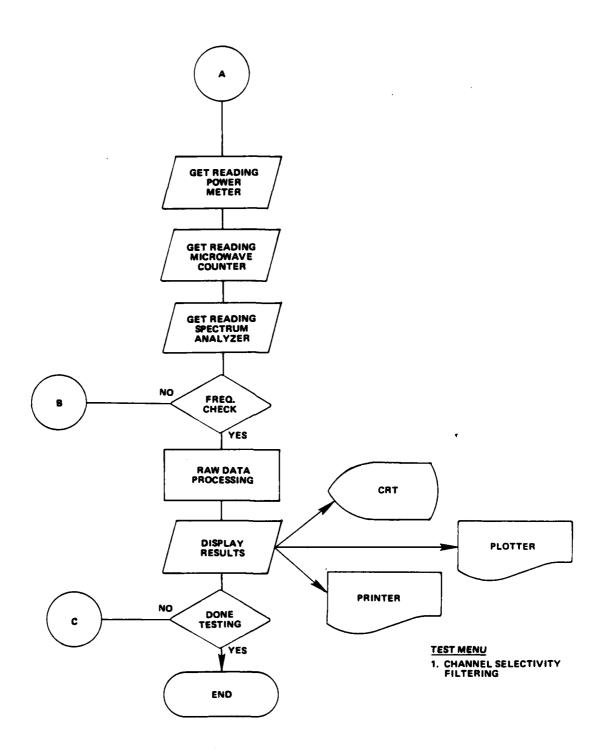
# R. F. FREQUENCY CONVERSION

PROGRAM MODULE NAME: \_\_\_ START POWER ON 1. DISPLAY SET AE MANUAL INPUTS 2. CRT MANUAL PROMPTS MAKE CONNECTIONS 3. PRESS [RET] WHEN READY. SET DIGITAL CONTROLS VIA BUS SET RANGE FOR ELECTRONIC COUNTER SET RANGE FOR SWEEP GENERATOR LO FREQUENCY →350 MHz SET RANGE FOR SIGNAL L1-RF → 1575.42 MHz ± 10 MHz L2-RF → 1227.6 MHz ± 10 MHz GENERATOR READ BUS (ELECTRONIC COUNTER) RAW DATA CRT TEST MENU DISPLAY RESULTS 1. R. F. FREQUENCY CONVERSION PRINTER NO DONE TESTING YES END

### CHANNEL SELECTIVITY FILTERING

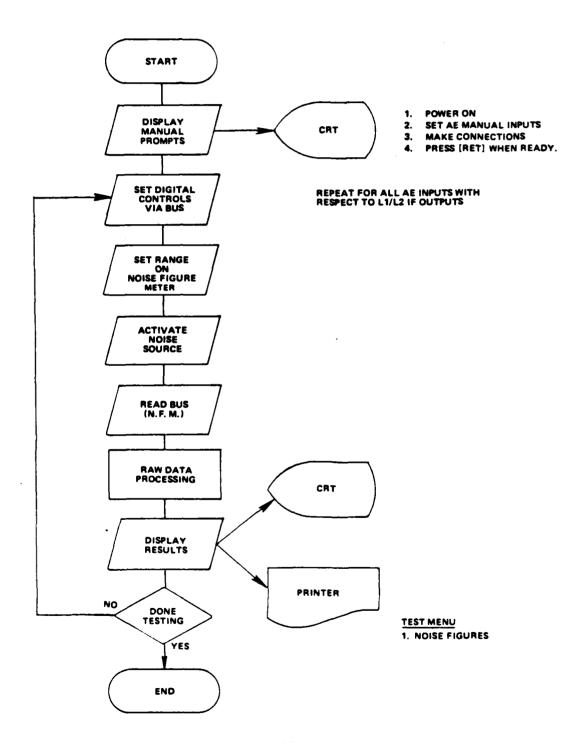
PROGRAM MODULE NAME:





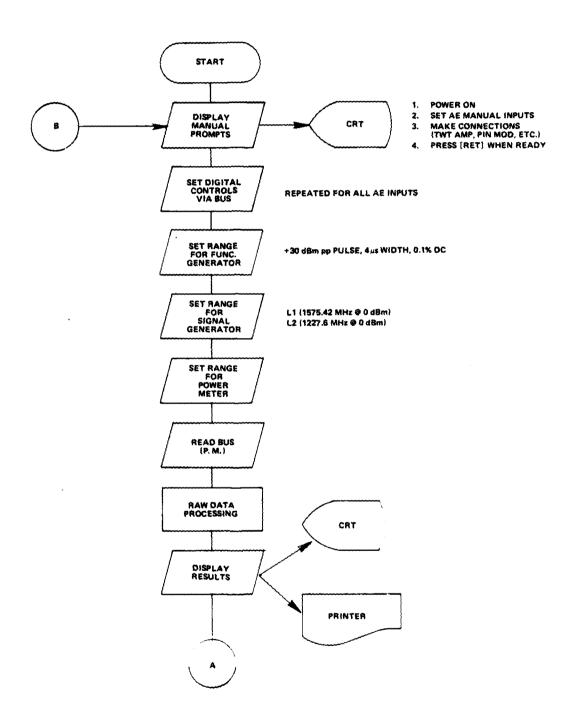
NOISE FIGURES

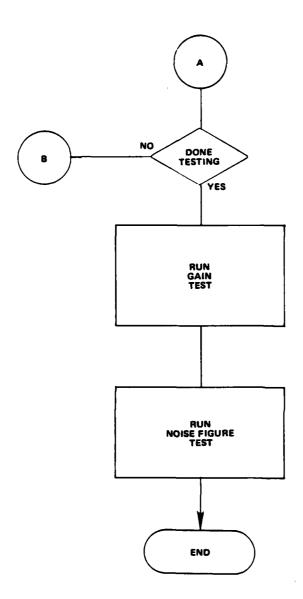
PROGRAM MODULE NAME: \_\_\_\_\_



#### NON-DAMAGE INPUT LEVELS

PROGRAM MODULE NAME:





TOOL TOOLS PRODUCE PROPERTY PROPERTY SECRET STATES SECRET.

AFTER THE NON-DAMAGE INPUT LEVEL TEST IS COMPLETE THE GAIN TEST AND NOISE FIGURE TEST WILL BE RUN TO VERIFY THAT THE AE DID NOT INCUR PERMANENT DAMAGE.

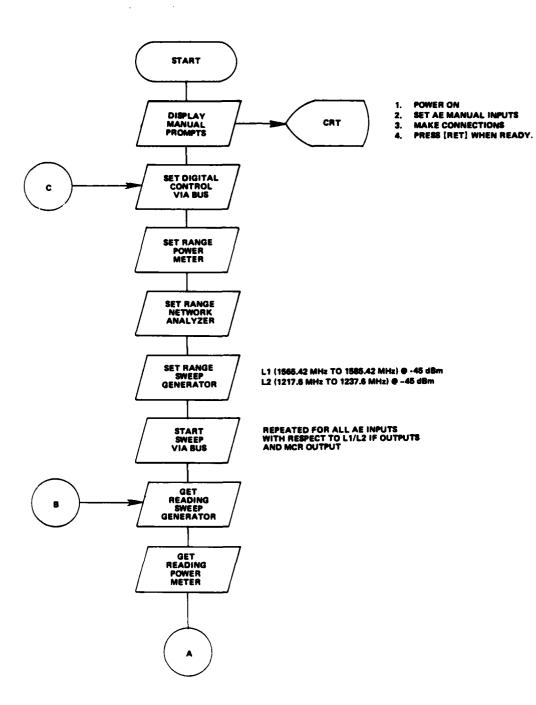
**TEST MENU** 

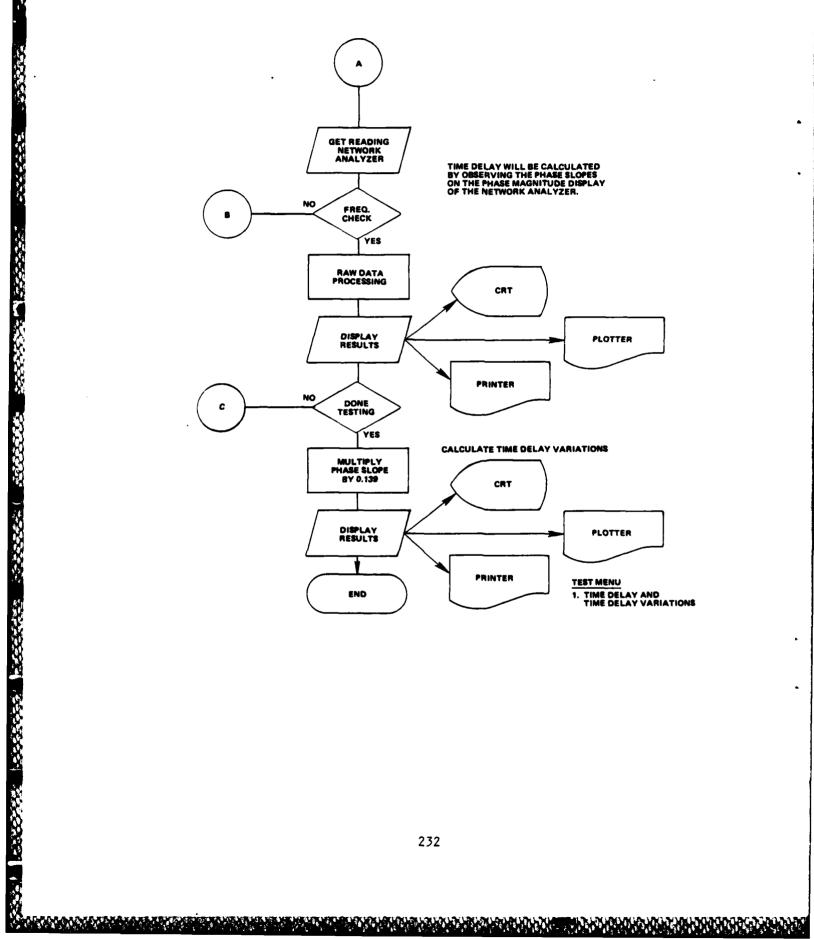
1. NON-DAMAGE INPUT LEVELS

#### TIME DELAY AND TIME DELAY VARIATIONS

PROGRAM MODULE NAME: \_\_\_\_\_\_

recens a consequent and a consequence of the conseq

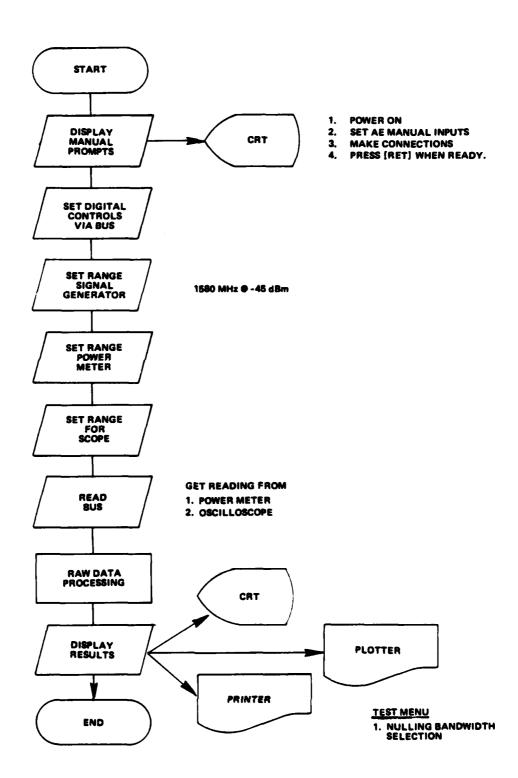




unio despuerti arginto, a crinto comincio de esplaca estante ara antende en monero esta de procesa arte en especia de maio

# NULLING BANDWIDTH SELECTION

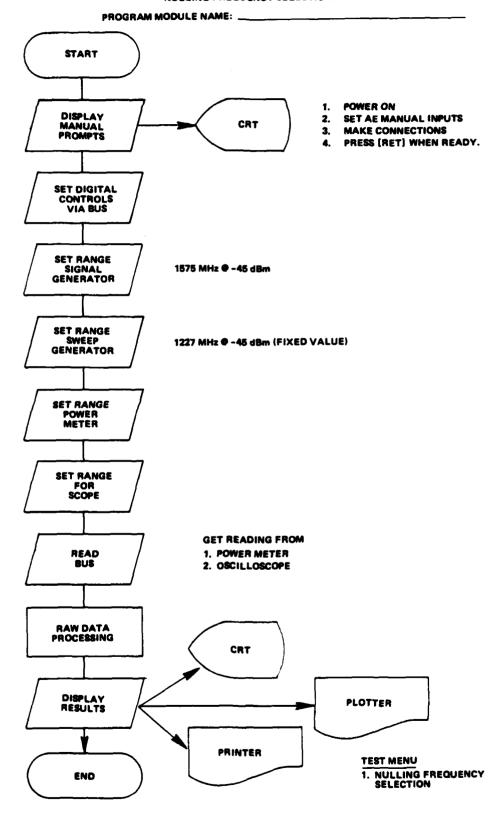
PROGRAM MODULE NAME:



#### **NULLING FREQUENCY SELECTION**

The state of the state of

Control of the Contro



**EMFRPA SELECTION** 

PROGRAM MODULE NAME: .

START 1. POWER ON
2. SET AE MANUAL INPUTS DISPLAY MANUAL PROMPTS 2. CRT MAKE CONNECTIONS PRESS (RET) WHEN READY. SET DIGITAL CONTROLS VIA BUS SET RANGE SIGNAL GENERATOR L1 (1575 MHz) @ -45 dBm L2 (1227 MHz) @ -45 dBm SET RANGE FOR GET READING FROM OSCILLOSCOPE READ RAW DATA PROCESSING CRT

PRINTER

PLOTTER

TEST MENU

1. BMFRPA SELECTION

DISPLAY RESULTS

DONE TESTING

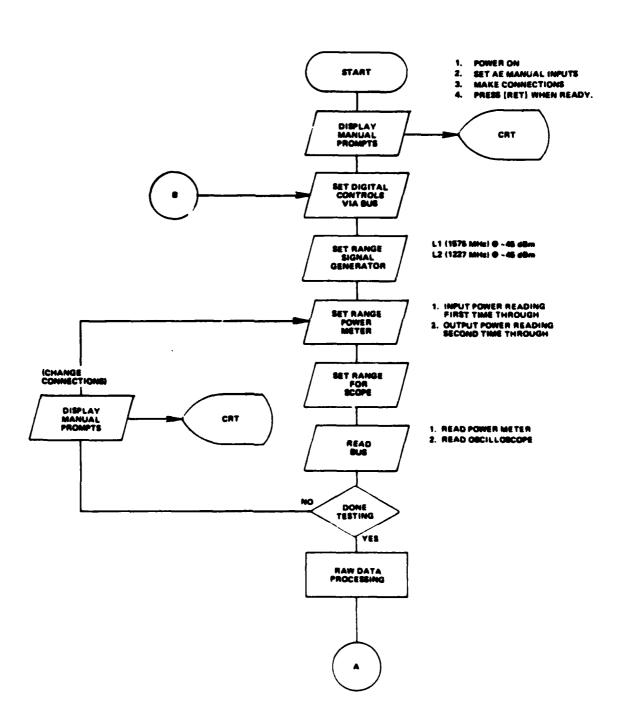
END

YES

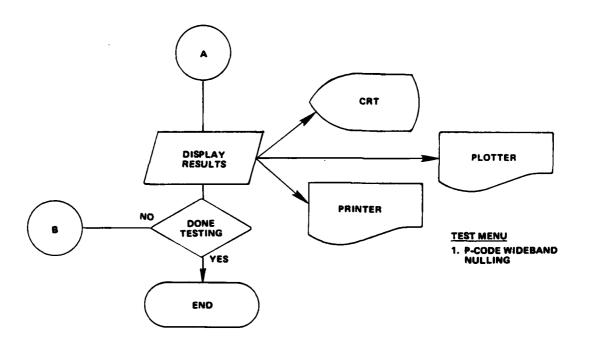
NO

#### P-CODE WIDEBAND NULLING

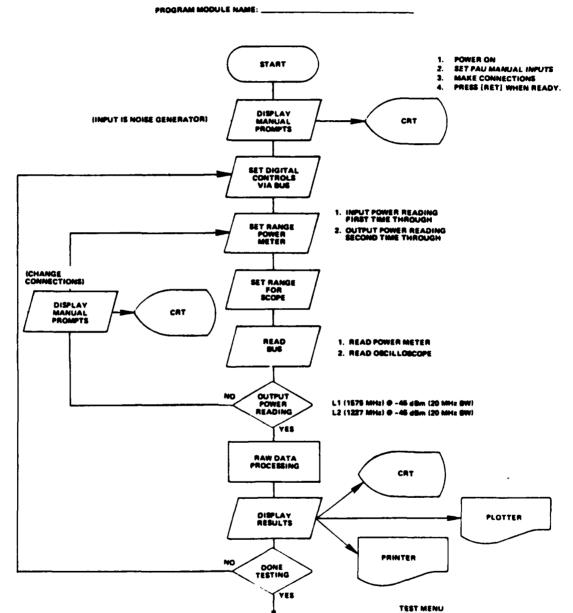
PROGRAM MODULE NAME:



2000



#### WIDEBAND NOISE NULLING

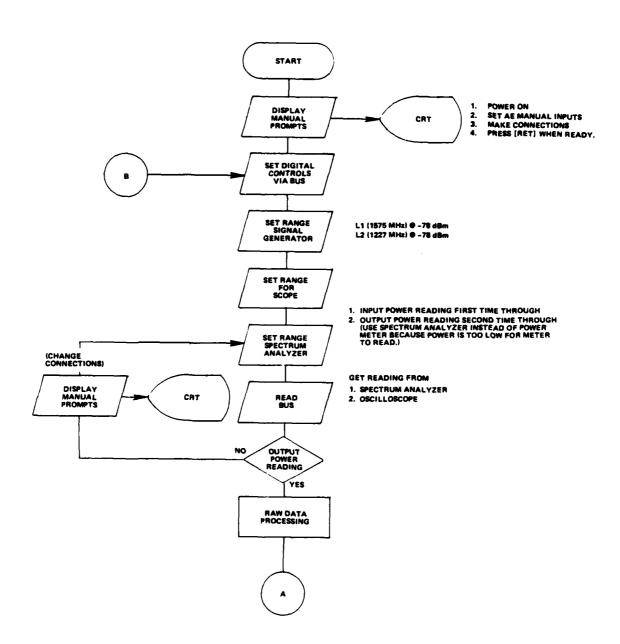


END

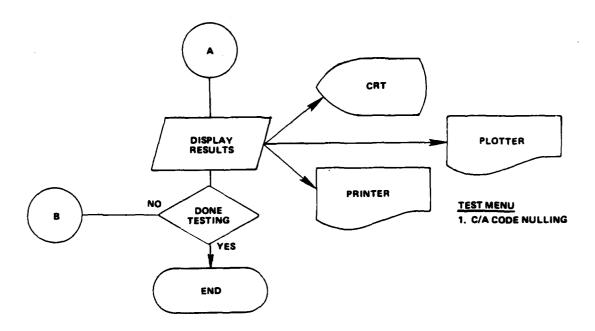
1. WIDEBAND NOISE NULLING

#### C/A CODE NULLING

PROGRAM MODULE NAME:

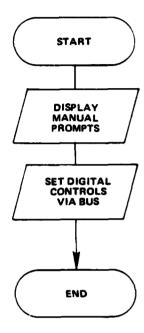


Market Receiped and the second



# BIT DURATION

PROGRAM MODULE NAME: \_\_



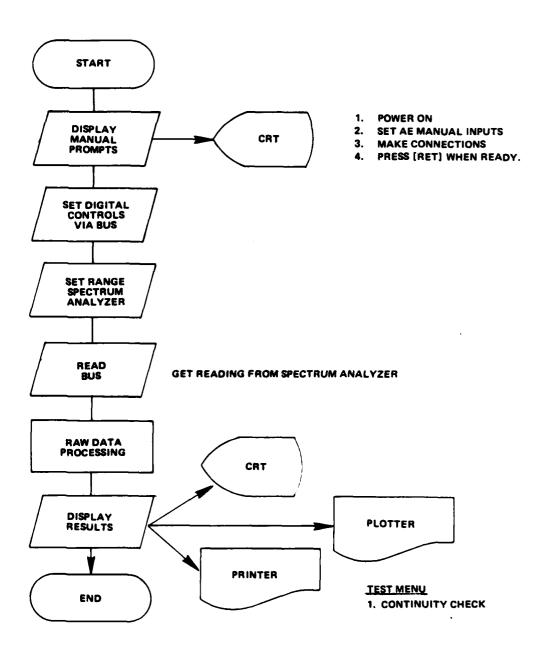
- 1. POWER ON
- 2. SET AE MANUAL INPUTS
- 3. MAKE CONNECTIONS
- 4. PRESS [RET] WHEN READY

TEST MENU

1. BIT DURATION

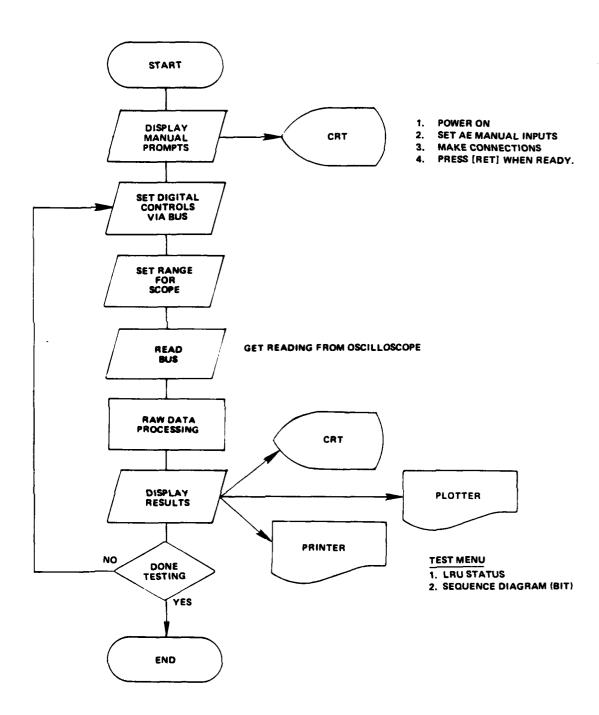
# **CONTINUITY CHECK**

PROGRAM MODULE NAME: \_\_\_\_\_\_\_



# LRU STATUS AND SEQUENCE DIAGRAM (BIT)

PROGRAM MODULE NAME:



# TEST RESULT WORD ACKNOWLEDGMENT AND WORD FORMAT PROGRAM MODULE NAME: START **POWER ON** DISPLAY MANUAL PROMPTS 2. SET AE MANUAL INPUTS CRT 3. **MAKE CONNECTIONS** PRESS [RET] WHEN READY. SET DIGITAL CONTROLS VIA BUS SET LOGIC PATTERN GENERATOR SET RANGE FOR SCOPE GET READING FROM OSCILLOSCOPE READ BUS RAW DATA PROCESSING CRT DISPLAY RESULTS PLOTTER PRINTER NO DONE **TEST MENU** TESTING 1. TEST RESULT WORD ACKNOWLEDGMENT YES 2. WORD FORMAT

END